The Paper Trade Journal.

"The Consumption of Paper is the Measure of a People's Culture."

VOLUME XVII.—NO. 39. NEW YORK, SEPTEMBER 29, 1888. WHOLE NUMBER 752.

Trade Topics.

Laboratory Notes.

[WRITTEN FOR THE JOURNAL.]

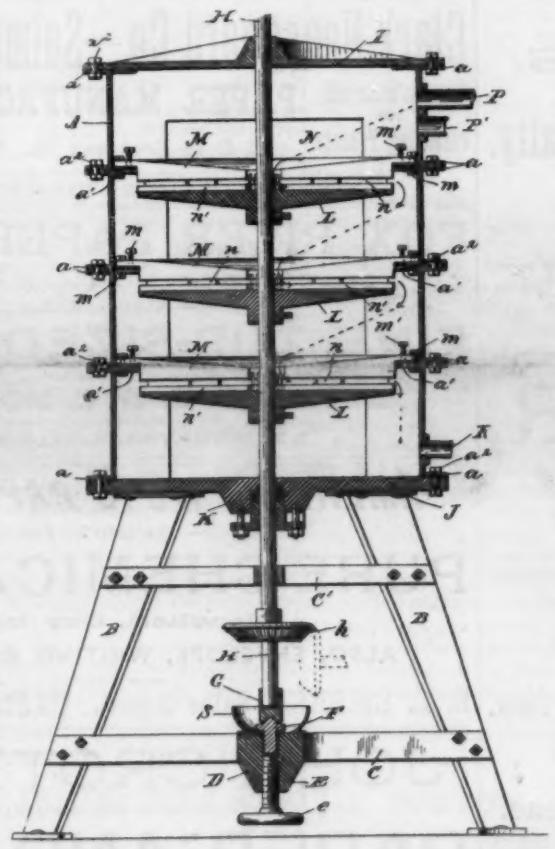
BY R. B. GRIFFIN AND A. D. LITTLE.

The idea of producing a bleaching solution by the electrolytic decomposition of a chloride, as described under the head of "Laboratory Notes" in last week's JOURNAL, is old, an English patent having been granted as far back as 1851 to Charles Watt for such a process. Watt's process had, however, no practical value, and now possesses merely an historical interest. Since his time various inventors have taken up the subject, but partly owing to the imperfect development of electrical science and still more to the fact that they started in the wrong direction, they failed to secure results of commercial importance. Within the last few years, however, Eugene Hermite, a native of New York, although at present resident in England, has developed a process of electro bleaching differing widely from those which have gone before, and which has already attained so high a degree of practical success as to warrant the belief that it must ultimately supersede the methods now generally adopted. The process is therefore of the utmost importance to paper manufacturers, as they are by far the largest consumers of the bleaching powders now produced. Various descriptions of the apparatus employed have from time to time appeared in THE JOURNAL, and we shall limit ourselves therefore to the discussion of the process itself and the general arrangement of the plant. The plant as usually set up consists of a storage tank containing a solution of magnesium chloride ($MgCl_2$)—not the hypochlorite—carrying 2½ per cent. of the anhydrous salt, a dynamo to supply a current of 1,000 ampères under a potential of five volts for each electrolyzer in circuit, several electrolyzers in which the solution is subjected to the action of the current, and the ordinary drainers and bleaching chests or engines. The electrolyzers are merely large decomposing cells, answering in a more effective way the purpose of the small cell, which we described last week. They consist briefly of small, shallow, oblong tanks of heavily galvanized iron in which are arranged vertically and alternating with each other, numerous zinc and platinum plates, all of the platinum plates being joined together and connected with the positive pole of the dynamo to form the anode, while the zinc plates are similarly connected with each other and the negative pole to form the cathode. The solution of magnesium chloride is pumped from the storage tank into the electrolyzers, from which it flows in a steady stream upon the pulp in the first chest or engine. In passing through the electrolyzers the solution is decomposed, both oxygen—from the water—and chlorine being liberated at the anode, where they combine to form an oxide of chlorine, while hydrate of magnesium is formed at the cathode, the hydrogen resulting from the decomposition of the water escaping in the shape of bubbles. The rapid circulation of the liquid through the electrolyzer brings the oxide of chlorine and hydrate of magnesium into intimate contact, so that they combine to form a compound of singularly high bleaching efficiency. The exact nature of this compound is a matter of some controversy, but it is generally held, and, as we believe, correctly, to be the hypochlorite. The electrolyzed solution passes, as we have said, directly to the pulp in the first engine of a series of three or four, and is delivered at the same point at which fresh water would flow into a washing engine. After having made the circuit of the engine, the partially exhausted solution is removed by the washing cylinder from whence it flows into the second engine of the series, and so on until, as taken from the last engine, its bleaching efficiency is destroyed and it is returned to the storage tank. Since, in the process of bleaching, a hypochlorite is converted into a chloride, while the coloring matters are burned to carbonic acid and water, the spent liquor taken from the last engine has the same chemical composition as that which first came from the storage tank, and is consequently ready to be reconverted into a hypochlorite to do more work in bleaching, by being sent again through the electrolyzer. Starting thus with a solution of magnesium chloride, we have a complete cycle of changes, which brings us back to our starting point, so that almost the only cost of the process, after that of the original plant, is the cost of the power consumed. The greater part of the solution remaining in the bleached pulp as let down into the drainer is recovered by a method of washing by displacement, the total loss of magnesium chloride per ton of pulp bleached being a little over 100 pounds, costing three-quarters of a cent per pound. The economy of the process is, therefore, determined almost entirely by the cost of power where the bleaching is to be done; but with coal at $4.50 a ton this economy is never below 40 per cent., and with cheap water power it is largely in excess of that figure. This is over bleaching powder costing 2 cents at the mill.

The power needed to supply the current can be accurately figured as follows: Each electrolyzer requires, as shown by the galvanometers, a current of 1,000 ampères at five volts. This is equivalent, as was pointed out last week, to 5,000 watts, and dividing this by 625 we find that each electrolyzer requires 8 horse power, which agrees well with results obtained in practice. Eighty horse power are guaranteed to furnish the equivalent of one ton of bleaching powder per day, but our experience has uniformly shown this to be a very liberal estimate.

The great economy of the process is not, however, its only advantage. It bleaches much more quickly than chloride of lime, less than three hours being sufficient to bring soda poplar to fine color; it does not injure the fibre in the least, so that soda spruce and jute can be bleached without detriment to their strength; it enables each manufacturer to prepare his own bleaching agent, thus making him independent of fluctuations in the market; there is no residue, as from bleaching powder, to be removed at the cost of polluting the water course; the process is a cold one, so that no steam is required for heating, and it does away with the nuisance of mixing and the loss which may result from the deterioration of bleaching powder kept for any length of time. We have devoted much time to a study of the process as applied to the bleaching of rags, chemical fibre from both the sulphite and soda processes, jute, linen yarns, &c., in this country and abroad during the past fifteen months and are fully convinced of its efficiency, while it is warmly indorsed by such authorities as Cross and Bevan, of London, Pictet, of Geneva, and other European experts. The process has excited much discussion abroad and has naturally found many opponents, whose claim has been that only a small proportion of the current is utilized in doing useful work, the greater part being wasted in the formation of chlorates and perchlorates, which are of no value as bleaching agents. So far as we have been able to judge by following the discussion, this position seems to be due to antagonized interests or to laboratory experiments in which the conditions of the process have been disregarded. A moderate amount of chlorate is undoubtedly formed, especially if the solution be warm, but the efficiency of the process for paper makers will be determined by practical trials on the large scale, and these fully substantiate all that we have claimed.

The importance of the process can be more clearly appreciated when we consider the peculiar position in which the manufacturers of bleaching powder are at present placed. Chloride of lime can only be profitably—at least at present—produced as an adjunct to the preparation of soda by the Leblanc process. The price of soda has, however, been so forced down in the last few years by the competition of the Solvay process, which produces soda at much lower cost, although it does not make bleaching powder, that the makers of soda by the Leblanc process have been forced to raise the price of bleaching powder to cover their loss on soda, and as this competition is likely to be much more crushing in the future there seems to be no prospect that bleaching powder will be permanently lower in price, while there is a very good chance that it might be higher if not kept down by some such substitute as is offered by this process of electric bleaching.



MACHINE FOR REDUCING PULP.

Pulping Engine.

The illustration on this page shows the design of a new apparatus for reducing pulp for use in making paper.

The casing A, which contains the crushing or grinding plates, is supported on suitable standards, B, connected together by cross bars C and C'. The lower cross bar, C, is provided with a swell piece or thickened portion, D, in which is tapped a screw, E, having a hand wheel, *e*, the screw abutting against an adjustable support, F, on which rests a socket piece, G, and in the latter is stepped the vertical shaft H, having a beveled gear wheel, *h*, to be engaged by a driving beveled gear wheel. The upper cross bar, C', affords a vertical bearing for the shaft H, and the cap or cross piece I at the top of the casing affords an upper vertical bearing for the shaft. The standards B are bolted to the head J, to which the lower section of the casing A is attached, the head being provided with a stuffing or packing box K, through which the shaft H passes. The casing or shell A may be either cylindrical or rectangular in shape, the latter form being preferred, and the casing consists of as many sections as there are sets of reducing plates in the machine, these sections being preferably of cast iron and having outer flanges, *a*, at their tops and bottoms and inner flanges, *a'*, at their tops, forming T-shaped tops and L-shaped bottoms. The sections are secured together by screw bolts a^3 passing through the outer flanges, *a*.

The shaft H carries a series of reducing disks or plates, L, which are attached to the shaft by set screws which pass through their hubs. Above the rotary disks or plates are stationary reducing plates, M, which cooperate with the plates L. The plates M have openings at their inner edges, and are inclined inwardly on top, so that the pulp to be ground will readily work inwardly to be fed downward between the plates.

The inwardly projecting flanges *a'* of the sections of the shell or casing A support the plates M, the latter being secured to the flanges by bolts, *m*, and plates being provided with set screws, *m'*, abutting against the flanges, by means of which the plates may be adjusted vertically to regulate the distance between each set of reducing plates independently of the other sets.

The plates L and M, which are preferably of iron, are cast with grooves in their faces, and in these grooves are secured, by wedges or otherwise, steel knives, the knives *n* on the plates M projecting considerably from the faces of the plates to form suitable pockets or channels to carry the material properly. The knives *n'* of the revolving plates L are of hardened steel, and are set flush with the faces of the plates. The channels between the downwardly projecting knives *n* of the upper or stationary reducing plates permit the pulp to flow outward properly and to be evenly distributed on the revolving reducing plates. By arranging the stationary plates above the rotary plates and by setting the knives of the stationary plates so that they will project below the surfaces of the plates, as shown, and by setting the knives of the rotary plates flush with the surfaces of the rotary plates, a better quality of pulp is said to be produced than by the old arrangement of the reducing plates and knives.

The shaft which carries the rotary plates can be adjusted vertically to regulate the distance between the grinding plates by turning the adjusting screw by its hand wheel, and the stationary plates can be adjusted independently by the set screws. The casing is provided on two sides with doors, N, which may be of wrought or cast iron or of wood, and which permit ready access to the interior of the casing, and the latter (which is practically water tight) is provided with supply and overflow tubes or openings P and P' at or near its top, and with a discharge pipe or opening, R, at its bottom. The overflow tube or pipe P' permits of the escape of surplus pulp or water if too much material be supplied to the machine. A water dish or receptacle, S, on the cross bar C may surround the step of the shaft.

In the attrition incidental to the grinding operation the reducing plates sometimes become heated, and this heat is communicated to the shaft, by which the rotary plates are carried, and to keep the socket piece G, in which the shaft is stepped cool water, may be supplied to the dish to cool the lower bearing of the shaft.

The pulp to be reduced follows the course through the machine indicated by dotted lines, working inwardly down the inclined upper sides of the stationary plates, and through the openings at the inner edges of these plates to pass outward between the plates L and M, the material passing successively through the different sets of plates, and being reduced to the desired consistency (which may be determined by the adjustment of the plates) before it is discharged from the machine.

Hints for Millwrights and Mill-owners.

[WRITTEN FOR THE JOURNAL.]

BY MILLWRIGHT.

I had at one time an excellent millwright who could do a fine piece of work after he once got started, provided he had someone to start him right. This man was no hand to begin a job correctly, unless he made elaborate drawings of the whole work. He could make fine drawings. They would be accurate, all drawn exact to scale and finished in a first-class manner.

When such drawings were completed this man could take them in hand and do good work therefrom. Without the drawings the man seemed at a loss how to begin, unless somebody told him and made marks for him to work to. When changes were to be made in the work he was all at sea, unless he could erase the lines from his drawing and elaborately replace them with the new markings.

Fifty years ago everything was done by "rule of thumb," work was got out by "guess and by ——," then put together by "main strength and stupidity." Such a state of things naturally led to a reaction, and drawings were made to everything. This matter was carried to a great extreme, drawings being made for every detail. A reaction again took place, or rather a reform, and now the best practice calls for figured sketches, made fairly to scale, but not so terribly exact as called for by the millwright mentioned above.

When changes are to be made the drawings should not be changed. The necessary alterations, if slight, can be put in with red ink, and figures put in to denote the size of the addition. In many cases a scale drawing is useless. Sketches showing about the relative proportions are all that is required and the figures tell the rest.

A man who finds himself situated like the millwright here described should set at work forthwith to break himself of what is simply a habit, and a very bad one at that. There is no need of being tied up to a plan, or to somebody else. Let him learn to do a little thinking for himself and he will soon gain confidence to go ahead and be worth a dollar a day more to himself and his employer.

WATER WHEEL STEPS.

In a recent issue of THE JOURNAL a correspondent told how to prepare water wheel steps. The method as stated has provoked just criticism from Mr. Lawrie in his "Talks," for packing in oiled sawdust can only be referred to as a foolhardy practice, unless the sawdust box be left in the boiler furnace ashpit, or placed on a rock under the dam.

Here is my method of "curing" water wheel steps. A good-looking rock maple is hunted up. If that variety cannot be found get a smooth bark, red maple, better known as the ordinary kind. The rock maple is the sugar yielding variety. Cut the tree and split the trunk into quarters. I will not use other than quarter stock for steps if I can find lumber big enough. Cut up the quarters into lengths sufficient for single steps. Turn roughly to within one-half or three-fourths inch of finish size. Leave this amount of wood to take off when truing up at time of setting the step. Never turn a step and keep it on hand in the shop or engine room; it doesn't pay. Also, never be forced to use a green step; keep two years' supply on hand at least.

After the steps are blocked out—and a dozen may well be made at once—sink them in the wheel pit or raceway, and leave them there until the sap is entirely soaked out. For three months, at least, the steps should remain under water. Two years will do no harm.

Always keep a spare step on hand, but, as before stated, don't keep it in the boiler room. When the spare step is put under the wheel do not delay for a single day, but

(*Continued on page 695.*)

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Holyoke Notes.

[FROM OUR REGULAR CORRESPONDENT.]

HOLYOKE, MASS., September 27, 1888.

There is a little more snap and go to business this week than has been noticeable of late, and manufacturers say that orders are coming in more freely than recently. No important orders as to size are reported, but the flow of smaller ones makes in the aggregate quite a respectable showing. Therefore the manufacturers have very little cause to grumble. The high water caused by the recent heavy rains has made some trouble for a few of the mills this week, but it has not caused any serious damage. The market shows no change as to prices, and all grades seem firm in this particular. The same conditions rule as to news, and it has become an old story to say that orders for this grade are pressing. Book papers are in excellent demand, and the volume of business in this line is large. Fine writings show a marked improvement over the past few weeks, and there is a very good call, especially for the finer grades. Manillas, tissues and straw wrappings are moving well. The rag and general stock market does not show any marked changes. The call is quite limited, and the manufacturers have not begun to stock up yet.

The Whiting Paper Company is sending out a handsome circular, giving information in regard to the various kinds of high grade paper which is furnished by its three mills. The centre of the document is occupied by facsimiles of the bronze, silver and gold medals awarded the company at the Centennial, Cincinnati Industrial, Paris, St. Louis, New Zealand and New Orleans expositions, for the best quality and excellence of the papers. The product of Mill No. 1 is weddings, ledger, linen and bond; No. 2, bristols, writings and blank book, and No. 3, linen and writings, the combined product being 25 tons daily.

The funeral of Lewis B. Hooker, whose sudden death was mentioned in this correspondence last week, took place at South Hadley Falls on Sunday, and was the largest ever held in the place. The village church was too small to hold all who desired to attend. The Grand Army post, of which Mr. Hooker was the commander, Mt. Holyoke Masonic Lodge, the Pioneer Hose Company and many employees of the Carew Paper Company were present and followed the remains to the grave. Delegations from Grand Army posts in many surrounding places attended the funeral. The floral tributes were very beautiful.

The Holyoke Water Power Company has determined to open a tract of 50 acres east of the Connecticut River Railroad tracks for the development of the mill privileges in that vicinity and to furnish room for homes for the employees of future industries. This tract is near the Hampden Glazed Paper Company's mill and several other industries, and quite an improvement will be made in that section of the city before long. This will call for a separation of the railroad and street grades in the vicinity, which will be quite an improvement.

A new firm, to be known as R. F. McElwain & Co., has just been formed for the express purpose of manufacturing a paper tester invented by Superintendent Mullen, of the Crocker Manufacturing Company's mill, which was fully described in the columns of THE JOURNAL not long ago.

Charles L. Morgan, who has been employed in the finishing department of the Whiting No. 1 Mill, has accepted a position with the Hurlbut Paper Company, at South Lee.

The Water Power Company is to put in a new tailrace and to erect a building near the Cabot street mill to accommodate the incandescent electric light plant which is soon to be put in.

E. C. Taft and family, who have been spending the summer at Swampscott, have just returned to the city.

The Republicans had their first torchlight parade, flag raising and rally last night, and the tariff, free trade and protection were fully discussed. H.

Fox River Notes.

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, WIS., September 24, 1888.

A new pulp mill, of four grinders' capacity, is now being put up near Fifield, Wis. The company, which has just been formed, is called the Flambeau Water Power Company, and is composed of Henry Sherry, of Neenah, and George Gerry, Walter Murphy and C B. Pride, of Appleton. The mill is being built upon the Flambeau River, about 50 miles south of Ashland, Wis. The location is on the Wisconsin Central Railroad, and it is said that the water power is large and equable. The mill will be running this winter, and the company purposes putting up a paper mill next year. The Appleton Machine Company has been given the contract for supplying four of its new grinders to the concern, and will also furnish other pulp machinery, core wheels, pinions, cast iron harnesses for the water wheels, &c. The wet machines are being made at Kaukauna by the Atlas Iron and Brass Works.

The new vacuum pump and sulphur furnace for the bisulphite fibre mill of the Atlas Paper Company has arrived, and a largely increased output of fibre is the result. The pump has been set up and is now in action, replacing the old pump entirely. It is run by a belt from an overhead pulley, and looks like a large and heavy stationary engine. It appears to be actuating the shaft instead of being actuated by it. The pump was made at the Deane steam pump establishment, and is a very powerful machine. With it the vats could be easily crushed by the exhaustion of air. During an experiment the other day the iron rings encircling one of the great tubs were dropped downward by the contraction of the vat under pressure of the outside atmosphere. The additional sulphur furnace is also in operation, and by its aid and that of the pump all the liquor necessary for running both digesters at full capacity can be made. The output of fibre has been increased to over 4 tons per day.

The new stone building which has been under construction at Kaukauna by the Badger Paper Company is now nearly ready for occupancy, and the work of removing the bleach boiler and rag manipulating machinery into it from the main mill building will soon be undertaken. All cutting, dusting, sorting and cooking of stock will hereafter be accomplished in the new building, which is sufficiently ample in size to provide large storage accommodations besides. The beating engines will be allowed to remain in their old locations. The new paper machine for this company, which is being constructed by the Atlas Iron and Brass Works, is well under way.

The stone foundation for the finishing room of the Ravine Paper Company's new mill in this city is now nearly completed. It is at the western extremity of the building. A large amount of fine building stone has been quarried from the river bed directly under where the mill itself is to stand, and is lying about in huge piles ready to be built into walls. The old breakwater, formerly extending down from the dam to the Lake street bridge, has been removed, and a cofferdam some 60 or 70 feet south of it has taken its place and serves to keep the river from invading the scene of operations. The stone flume, with its overflow, will come down from the dam just inside the bounds of this cofferdam and terminate below the bridge, where the wheel pit of the mill will be located. The masonry of the foundation will rise to a level a trifle above that of the roadway of the bridge. A large force of men are employed in quarrying and laying stone and stripping the river bottom for the laying of the outside flume wall.

The superintendent of the wood pulp department of the Telulah Paper Company's mill, in this city, made a very large quantity of pulp in one day recently. The Northwestern grinder, manufactured by the Valley Iron Works Manufacturing Company, of Appleton, is the kind used in the Telulah, and with the eight 18 inch grinders, in twenty-four hours, 419 bundles of 40 per cent. dry poplar pulp and 87 bundles of 40 per cent. dry spruce pulp were turned out. This is an average of about 2 530 pounds to each machine. As machines of the size employed are only guaranteed to grind 1,500 pounds in twenty-four hours, their efficiency will be seen to be considerably greater than their manufacturer claims for them.

Accidents, even so infrequent in nature as the explosion of a bleach boiler, seem rarely to occur without being speedily repeated elsewhere. The theme of the Menasha disaster was still on everybody's tongue when the news was received of the explosion of the rotary at Beloit, in the mills of the Beloit Strawboard Company. Informed paper men say it is the only case of the bursting of a globe boiler they ever heard of. Most fortunately, and almost providentially as well, it seemed but few men were in the vicinity of the boiler, and although the building was badly wrecked only one person was injured.

The office building of the Kimberly & Clark Company in this city is undergoing some interior improvements. The partition walls of the private offices have been removed, throwing the whole floor space into one large room, which will more easily accommodate all the office conveniences. A new Hall's safe of ample size is expected daily.

The new Babcock & Wilcox steam boilers for the Kaukauna Paper Company's mill have arrived, and will soon be set up in the new boiler house. Several noteworthy advantages are claimed for these boilers, aside from the important one of their absolute safety, and their performance will be watched with interest by manufacturers. Charles Wilson, of New York, the company's representative, was in the city last week on business connected with the setting of the boilers.

E. R. Marshall, of the Marshall Engine Company, of Turner's Falls, Mass., departed for the East Saturday evening, after spending a week or two in this vicinity. The Marshall perfecting engine which has been placed in the mill of the Appleton Paper and Pulp Company is now in continuous operation, and is giving high satisfaction. The company has ordered four more, which will be placed in the mill now being erected at the Combined Locks.

Fox River towns were favored last week by the presence of a much larger number of trade representatives than usually congregate at any one time. The Waverly House, in this city, was made headquarters. Besides Messrs. Wilson and Marshall, whose presence has already been noted, manufacturers have entertained H. T. Bartow, F. W. Bidwell and C. L. Heuser, of New York; C. H. Dobilinski and W. H. Bucher, of Philadelphia; Ed. Conley, of Boston, and J. Burney, of Fitchburg, Mass.

FOX RIVER.

Boston Notes.

[FROM OUR REGULAR CORRESPONDENT.]

EASTERN OFFICE PAPER TRADE JOURNAL,
47 Federal Street,
BOSTON, September 27, 1888.

Yesterday was an off day, for the rain fell in torrents and the wind blew a gale, making the streets the most undesirable place to be in, and in consequence everybody that could remained indoors.

To-day, however, is a big improvement over yesterday, so much so that one can hardly realize that yesterday was such a terrible stormy day.

Business continues very good with paper dealers, both in response to local demands and out of town orders.

Manufacturers are well supplied with orders and seem to be quite content with the present situation of business, while the future outlook is fully as encouraging.

Manilla papers are in better demand and prices very firm. In certain quarters a slight advance is claimed to have been made on orders recently received. As jute stocks have advanced in price it is thought that higher prices for manilla papers will become the feature of the market very soon.

The paper stock market shows no change for the better. If anything the situation is worse, owing to the difficulty of getting freights to Boston. Rates are higher from some ports, while from others there is no freight room to be had at present for paper stock, as such goods are shut out by better paying merchandise. Just what effect this will have on the local market it is impossible at present to say. Such movement as is noted in trade is made up of small orders, which take the receipts as they arrive, but nothing is doing in future contracts to speak of.

The local chemical market is responding to the foreign combination and prices are buoyant. Bleaching powders are very firm at 1.90@1.95c., and in fair demand. It is reported that very little is offering in foreign markets for October delivery, and higher prices are anticipated. The demand for caustic soda is quite active, local quotations being 2.30@2.35c. for 60 per cent., for 70 and 74 per cent. Liverpool quotations have advanced 15 to 20 per cent. Soda ash is unchanged. Soda crystals are quoted at ⅞@.90c. and in small local supply, the receipts going into consumers' hands as they arrive.

The receipts of chemicals for the week to date comprise 461 casks of bleaching powders, 790 drums of caustic soda, 252 casks of soda ash, 380 barrels and 400 kegs of soda crystals.

Paper stock imports for the same time include 3,077 bales of rags, 2,471 bales of manillas and 903 bales of miscellaneous grades.

Henry Richards, of Gardiner, Me.; John P. Flint, of Bellows Falls, Vt.; A. N. Mayo, of Springfield, Mass., and C. S. Mayo, of Lawrence, Mass., were in town this week.

J. Richard Carter, of Carter, Rice & Co., who has been sojourning in Europe with his family for some months, is expected to return to the city by the steamer Cephalonia, which leaves Liverpool on Saturday of this week.

Philip Greely is fitting up a new office at No. 141 Franklin street, corner of Federal, into which he will move in a few days, vacating his old office at No. 19 Milk street. By this change Mr. Greely gets into the heart of the paper trade, while at the same time he obtains better facilities for his increasing business. Book, news and manilla papers are his specialties, in which he is building up a very good trade.

Schwehr, Kendall & Co. is the name of a new firm just started to do a paper stock importing business, with an office on State street, this city. Mr. Schwehr has been connected with the paper stock business for a long time, and was for a number of years with John Pfeffer & Co. and their successor, A. Baudny, Paris, France. For three years past he has been the sole United States agent for M. Alphen & Chapelle, Jr., of Paris, all of these firms being packers of paper stock. Mr. Kendall is the Boston agent of Baldwin Brothers & Co., of New York, proprietors of the American-European Express.

Next month the Boston Paper Trade Association will resume its monthly reunions, Wednesday, October 17, being the date of the looked for event. DELESDERNIER.

"Tangent" Wood Pulp.

Dr. Sellnick writes to the *Papier Zeitung* as follows:

"The process hitherto in use for making ground wood pulp consists in placing a block of wood on the front or periphery surface of a grindstone and grinding it down with a flow of water. In this way we can have either cross cut or longitudinal fibre, according as the wood is placed in relation to the direction of the fibres. The most important point of this process is that the

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SEND FOR SAMPLES AND PRICES.

block of wood has its entire surface laid on the surface of the grinding stone and firmly pressed on it.

"The new process of making ground wood pulp, invented by H. Schmidt, of the Boekau Mills, is radically different. The block of wood is brought as a tangent in the longitudinal lay of its fibres on the periphery of the rotary stone in a to and fro motion, and is ground off on the points of contact. The part ground off is not therefore done by pressure, but by a regulated feed system, and thus the fineness of the ground fibre can also be accurately fixed. The fibres obtained by this system differ from the longitudinal ones obtained by pressure in that they run out into very sharp fine points and that these are more easily felted. I do not consider that this wood pulp can be simply denominated as 'longitudinal,' and believe it better to term it 'tangent' ground wood. In future, therefore, we shall have three varieties in wood pulp, viz., cross cut, longitudinal and tangent.

"At my wood pulp mills at Alt-Zschillen I have put up a new plant with four tangent grinders, and have been working them for a month past. I shall report on them shortly. At the same time I am prepared to send samples to paper manufacturers."

Various Bleaching Solutions.

The "Eau de Javelle," invented in Paris in 1792, was the first bleaching liquor, and was successfully used for bleaching textiles, &c. It was prepared by admitting chlorine gas to a solution of carbonate of potash, when, with chloride of potassium, hypochlorate of potash is formed. It contained also free hypochlorous acid, which imparted bleaching properties at once.

So little chlorine gas was admitted, however, that some 4 or 5 per cent. of undecomposed carbonate of potash remained, which was transformed into a bicarbonate salt. If too much chlorine were admitted chlorate of potash might be formed, which possesses no bleaching power.

The same bleaching liquor may also be formed by displacing a chloride of lime solution with dissolved carbonate of potash, when in addition to insoluble carbonate of lime a solution is formed of hypochlorate of potash and chloride of potassium. But to liberate the bleaching hypochlorous acid from it a stronger acid must be added.

A similar bleaching liquor is the "Eau de Labarraque," which was first prepared in 1820 by admitting chlorine gas on soda, but which can also be obtained by decomposing chloride of lime with soda or glauber salts. In the latter case carbonate of calcium is precipitated and hypochlorate of soda remains with chloride of sodium (table salt) in solution.

"Chlorozon," or "Essence de Boulogne," was obtained by admitting cooled chlorine gas in cooled soda or potash lye.

Zinc bleaching liquor is made by displacing an aqueous solution of chloride of lime with a solution of sulphate of zinc. Gypsum is precipitated and the hypochlorate of zinc formed is immediately decomposed into protoxide of zinc and hypochlorous acid, which remain in solution.

Alumina bleaching liquor was made by Orioli from equivalent parts of chloride of lime solution and sulphate of alumina. Gypsum is precipitated and hypochlorate of alumina in solution is formed, but this has such little permanency that it cannot be used for bleaching without the use of acids, as chloride of aluminum and active oxygen are formed; the liquid remains neutral and no acid is formed to fasten on and attack the fibres. Chloride of aluminum has such an antiseptic action that the paper pulp can be kept from fermentation or other decomposition for weeks. According to Lunge and Landolt there is besides the chloride only free hypochlorous acid in solution.

Magnesia bleaching liquor is easily obtained by decomposing a solution of chloride of lime with sulphate of magnesium, in which gypsum is also precipitated. As magnesia is here liberated, and as it does not act like caustic, lime, straw, flax, hemp, &c., are not colored brown. On the other hand, the liquid decomposes far more readily than the chloride of lime solution.

According to Lunge it has been suggested to make the bleaching liquor, like the "Eau de Labarraque," from bicarbonate of soda, as in that case all of the chlorine would pass into hypochlorous acid, and the bicarbonate of sodium would also have a detergent action. In making it chlorine is left to act on the soda solution until this latter begins to foam, in which case the change takes place according to the following formula:

$$\underset{\text{Soda.}}{Na_2CO_3} + \underset{\text{Chlorine.}}{2Cl} + \underset{\text{Water.}}{H_2O} = \underset{\text{Chloride of sodium.}}{NaCl} + \underset{\text{Carbonate of soda.}}{NaHCO_3} + \underset{\text{Hypochlorous acid.}}{ClOH}$$

Although the hypochlorous acid is free in this liquor, it took Lunge an hour and a half to obtain the same result in bleaching on turkey red as was obtained in ten minutes by a solution of chloride of lime of the same strength and acidulated with acetic acid.

For the sake of fullness we may mention chlorine water. Water takes up a maximum of chlorine gas at 10° C. (50° Fahr.), but emits it again at ordinary temperature, and this renders it useless for manufacturing purposes. The same remark applies to oxygenated water, which can only be kept in dark bottles and has only a weak bleaching action. —*Handbuch der Papier Fabrikation.*

Gum Tragacanth in Sizing.

Mr. Rademacher, technical manager of the Partington Mills, in England, takes exception to Dr. Würster's assertion that tragacanth sizing is simply a better form of starch sizing. He says: "I wish to say that sizing with gum tragacanth is something quite different from that with starch. Paper sized with starch is very absorbent of water, but that sized with tragacanth is not so.

"Gum tragacanth is very often used in sizing lithographic papers, in which any expansion would be very injurious and which must be, therefore, avoided at any price. In surface sizing of chromo and enameled papers it has been tried very often, but the results—partly on account of the high price—were of no practical value.

"If Dr. Würster believes that tragacanth acts the same as, or similar to, starch, because it has a similar chemical composition, he will acknowledge his mistake as soon as he practically tries it in paper making."

Influence of Artficial Lights.

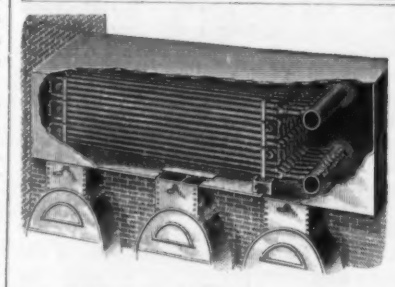
In all industries pertaining to the decorative arts the study of colors and their relation to each other is of the greatest importance. In order to select the colors which harmonize together it is not only necessary to observe mathematically correct laws which prescribe the employment of such a one color in the presence of such another, but even to study carefully how the several tones of the same primary color behave, when placed side by side, to produce decorative effects. Chevreul's researches have opened the way in this respect, and the study of the complementary colors has become the basis of the tinctorial art. In this regard the work is now done methodically, and the progress made in the art industries is truly remarkable for the production of harmonious combinations of colors. An important part of the study has been almost entirely neglected, however. In fact, the composition of designs, the examination of the tone giving effects, the contrasting of colors for any decorative work, are nearly exclusively done by daylight, and very little thought is given to the effect which will be obtained at night with a particular kind of artificial light, although it is just under such light that the whole of the decorative work will be seen most. Now, as the source of any artificial light has a color of its own, the aspect and relations of the colors are changed, and a tone which appeared to be combined with its neighbor in happy harmony by daylight produces an unsightly effect at night, under a new kind of light.

It is necessary, therefore, not only to harmonize colors by day, but to ascertain, moreover, whether they harmonize together in the artificial light in which they will be seen at night. We have for observations of this kind employed the method hereafter described, which is as inexpensive, as regards apparatus, as it is practical and rapid.

The apparatus consists of a rectangular wooden box, the inner sides of which are covered all around with plain black velvet, so as to obtain an absolute black in its interior. The colored samples of tissues, metals, woods, chinaware, &c., to be observed are placed singly or in groups upon the bottom of the box at the far end opposite to the observer, and are looked at through an opening made in the parallel side at the rear end. The lighting apparatus (oil or a petroleum lamp, gas burner or candle) is placed inside the box, near this opening, but separated from it by a screen, which is also covered with black velvet; its glass chimney being inclosed in a tube which is set into the opening through which the observer looks into the box. Thus all other rays of light are prevented from penetrating into the box but those from the illuminating focus within; besides, the burner itself is blackened, not varnished, and throws its light only upon the objects under observation, through an opening which is small enough to avoid any kind of reflection. On the outside, on a level with those in the box, samples like those under observation and others of nearly the same colors are placed upon a background of black or dark neutral gray velvet, separated by strips of the same color as the background. Thus the impression obtained with daylight can immediately be compared with that given with artificial light.

The results naturally vary with every kind of artificial light, but the same effects can be practically considered as constantly produced in the same manner by two powerful classes of artificial sources of light, only with varying intensity in each class. The first comprises the Drummond light, the electric light produced by the voltaic arc apparatus, and that produced by the incandescent light apparatus. These different systems do not alter at all the relations of the colors among themselves, but give to every combination of colors a livelier or more subdued tone, according to the illuminating power of the apparatus; we may add that with these different lights only variations of quantity come into play.

Different is the case of the systems of the second class, which we shall enumerate, like the first, according to the degree of brightness which they impart or which they leave to the majority of colors. These are the oxyhydric gas, fine stearine candles, ordinary illuminating gas, rape oil, refined mineral oil, kerosene. With these kinds of light producers the colors are generally attenuated, seldom brightened and often changed several degrees above or below their proper shade.—*L'Industrie Textile.*



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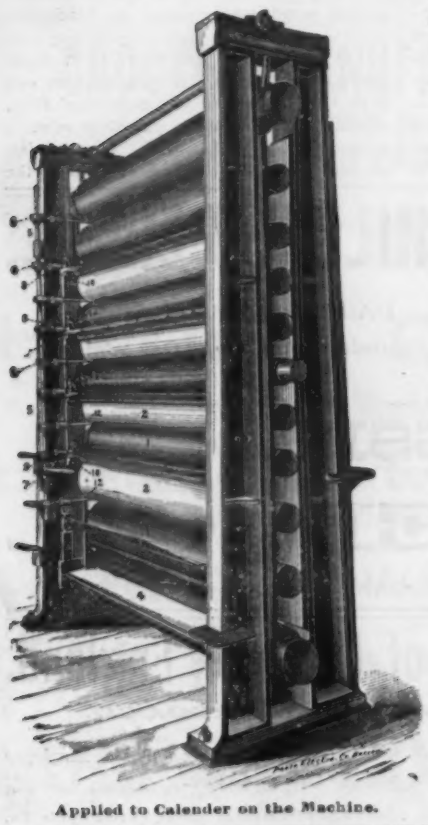
Patented Sept. 29, 1885; Nov. 16, 1886; other Patents now pending. This Machine is also Patented in England, France and Germany.



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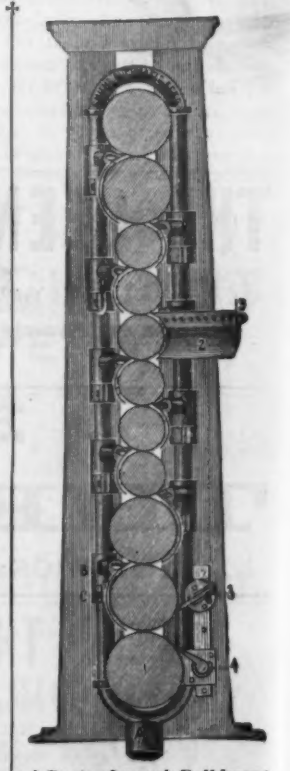

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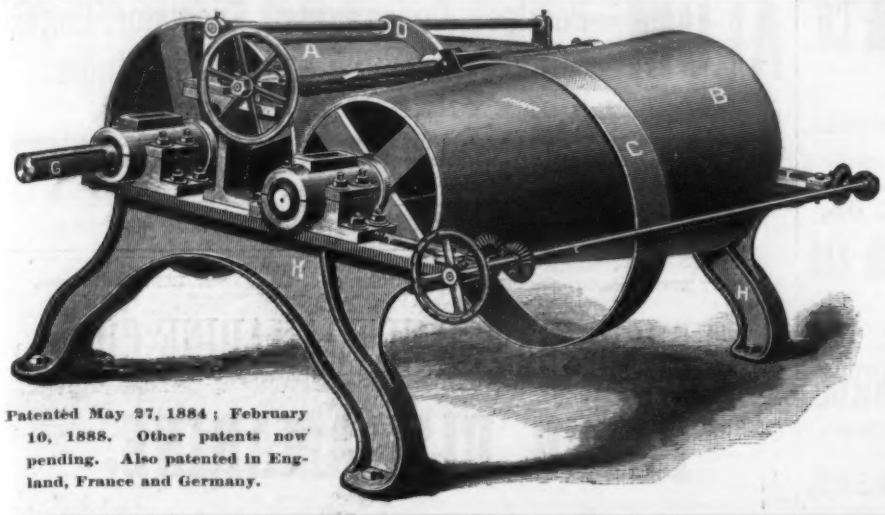

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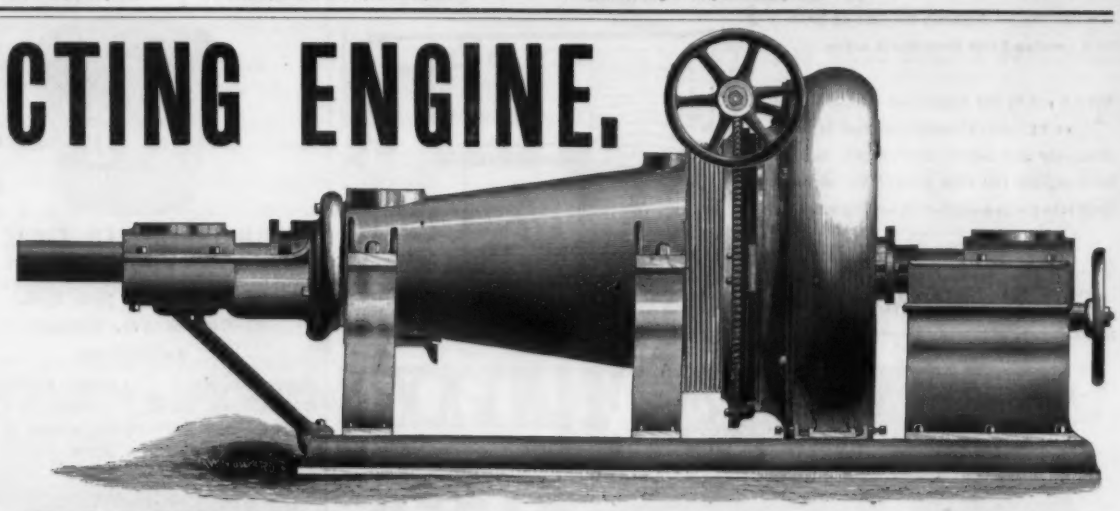
Very Best of References Furnished.



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ALL FELTS GUARANTEED TO RUN WELL, OR THEY CAN BE RETURNED.

We also manufacture **Blankets** and **Stocking Yarns** of all colors: also an **EXTRA HEAVY SCARLET FLANNEL FOR UNDERWEAR**, which we guarantee not to shrink.

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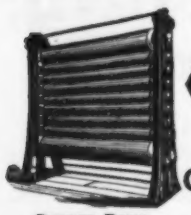

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The Largest Makers in the world of

CHILLED ROLLS,

FOR PAPER.

ALSO,

CHILLED AND DRY SAND ROLLS,

FOR ALL OTHER PURPOSES.

All our Rolls are ground by the Poole Grinder, which guarantees their perfectness and finish

☞ Old Rolls Reground at Short Notice.

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Leffel Turbine Water-Wheel,

Made of Best Materials and in the Best Style of Workmanship.

MACHINE-MOLDED MILL GEARING,

From 1 to 20 feet diameter, of any desired face or pitch, molded by our own Special Machinery.

Shafting, Pulleys and Hangers

OF THE LATEST AND MOST IMPROVED DESIGNS.

STEAM-ENGINES, BOILERS, SAW-MILLS,

Mixers and General Outfit for Fertilizer Works.

☞ Shipping Facilities the Best in all Directions.

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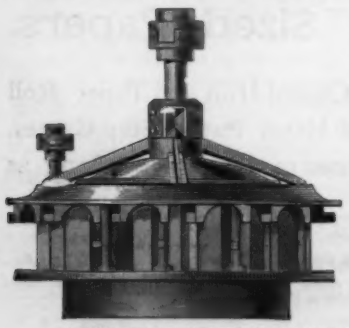
THE SUCCESS WATER WHEEL.



This Wheel is strong and durable. Excelled all other wheels in the great trial tests. Is in use all over the nation. I also make a specialty of

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PAPER, COTTON AND GRIST MILLS.

SEND FOR PAMPHLETS AND PRICES.

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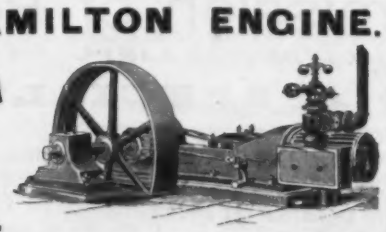
THE PORTER-HAMILTON ENGINE.

75 to 2,000 HORSE-POWER.

THE STRONGEST ENGINE IN AMERICA

Simple, Economical and of the Best Workmanship.



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CRESSMAN'S IMPROVED RAG ENGINE

With Geared Lighter, for raising both ends of the Roll-Shaft alike.

THE roll in this Engine has angular knives or fly bars, whereby the stock is more effectively and rapidly acted upon, making more regular and even stuff. This improvement is in use in a number of leading mills.

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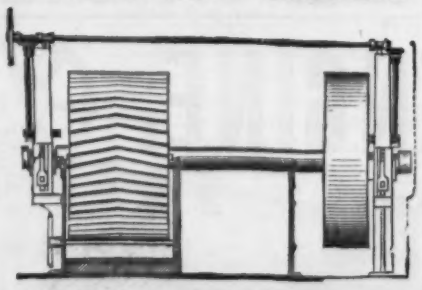
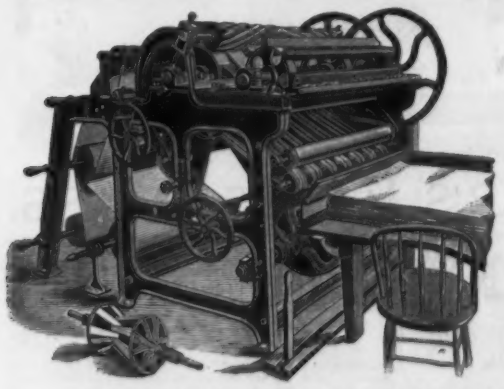


GEO. W. CRESSMAN, Lafayette Hill, Montgomery County, Pa



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Manufacturers will find this Cutter SUPERIOR to any in the market.

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We guarantee every Wheel to give entire satisfaction.

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SPECIALTIES:

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PAILS FOR ALL MILL USE.

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ALUM—Peerless, Concentrated, Excelsior, Eagle, Cake, Ammonia and Potash Alums.

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Soda Ash, Sal Soda, Caustic Soda, Bleaching Powders.

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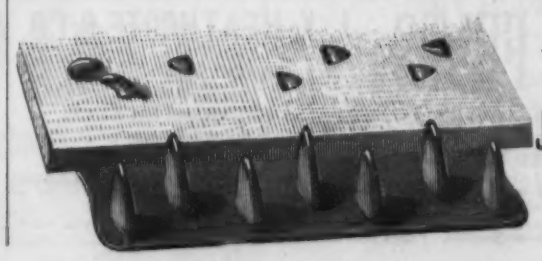

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DALAND, WILLIAM S., 124 Water st., N. Y.

HANSON, CHARLES A. 97 Water st.

Note Broker.

GOLDMAN, M., & SACHS, Negotiate the Notes of Mfrs. and Dealers of Paper. 4 & 6 Pine st., room 9.

Paper Clay.

McNAMEE & CO., RICH'D, 234 Broadway, N. Y.

SERGEANT BROS. 132 Nassau st., N. Y.

Paper and Paper Makers' Supplies.

BELDEN & DEAN, Paper Bags, Flour Sacks, Manilla and Straw Papers. 166 Fulton st., N. Y.

BUTLER & JOHNSON. 44 Beekman st., N. Y.

CLARK, CHARLES S., Newspaper in Rolls for Perfecting Presses. Book, Plate and Chromo Papers. Potter Building, 38 Park Row, New York.

CROTTY, JOHN, & Co., Paper and Twine, 428 Broome st., N. Y.

HEWITT, C. B., & BROS., Printing, Wrapping, Building Papers. 48 Beekman st., N. Y.

HULBERT, H. C., & CO., 53 Beekman st.

MURPHY, JOHN J., 47 John and 5 Dutch sts.

WHITNEY, F. E., & CO., Paper and Paper-Makers' Supplies. 23 Park Row, New York.

Paper Manufacturers.

DIAMOND MILLS PAPER CO., White and Colored Tissues, Copying-Paper, 44 Murray Street. Send for Samples of the new "Mikado" Tissue-Paper.

HAND, A. F., White and Colored Tissue and Copying Paper; mill at Peekskill. Paper Warehouse and office, 51 Beekman st., New York.

ORRS & CO., Printing and Hanging Mills at Troy. Roll Papers a Specialty. Office, 132 Nassau st., N. Y.

Paper Makers' Chemicals and Colors.

Printed Wrapping Paper.

THOS. A. O'KEEFE, Printed Wrapping, 48 & 50 Duane.

Rags and Paper Stock.

ATTERBURY BROS., 140 Nassau st.

EVANS & CURRY, 44 Rose Street, New York.

FITZGERALD, J. M., 135 & 137 So. Fifth Ave., N. Y.

FLYNN, MICHAEL, 61 Congress st., So. Brooklyn, N. Y.

GILDEA, PATRICK, 445 & 447 West 13th st.

HARLEY, CHARLES, Cotton and Woolen Rags, 362 Third st., New York.

HENNESEY, JAS., & CO., 62 Duane st., N. Y. Warehouses, 110, 112 & 114 Navy st., 233, 235 & 237 Tillary st., Brooklyn, and 514 N. 8th st., Brooklyn, E. D.

HUGHES BROS., 60-66 N. 2d st., Brooklyn, N. Y.

LIBMANN, JOSEPH, & CO., New Rags a Specialty. 158 South Fifth ave., N. Y.

LYON, J. W., & CO., 253 and 255 Front st., N. Y.

LYON, JOHN H., & CO., 10 & 12 Reade st., N. Y.

McKEON, JAMES F., Paper and Paper Stock. 246 Bedford Avenue, Brooklyn, E. D.

McQUADE, ARTHUR J., 535 & 537 E. 13th st., N. Y.

METZ, PHILIP, 49 Ann Street, New York.

O'MEARA, M., 277 Water st., N. Y.

OVERTON, R. H., 8 Reade st., N. Y.

PEYTON, R., Paper and Paper Stock, 56 Thomas st.

ROZÉS BROTHERS, Tribune Building.

RUSSELL, JAS. H., successor to M. RUSSELL, 30 City Hall Place, New York City.

SAVAGE, JAMES, Jr., 530 to 536 W. 38th st., N. Y.

SERGEANT BROS., 132 Nassau st., N. Y.

WARD, OWEN, & SONS, 448 & 450 West 39th st.

WYNNE, T. F., 13 & 15 Columbia st., Brooklyn, N. Y.

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Straw Boards.

HAVES, JAMES E., & CO., 75 Duane st.

JAEGER, GUSTAV L., Straw Boards, Lining and Box Machinery. 136 and 138 Mulberry st., N. Y.

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TOWER, D. H. & A. B.—Designs for Paper and Fibre Mills. Surveys and Plans for Mill Sites. Valuations of Mill Properties. Holyoke, Mass.

Dandy Roll Manufacturers.

BUCHANAN, BOLT & CO., Patent Seamless Wove and Laid Dandy Rolls. Holyoke, Mass.

CHENEY BIGELOW WIRE WORKS, Springfield, Mass. Pat. Seamless Wove and Laid Dandy Rolls.

Paper Manufacturers.

JERSEY CITY PAPER CO., White and Colored Tissue & Manilla Wrapping, Cornelison avenue and Montgomery st., Jersey City, N. J.

Paper Makers' and Paper Stainers' Colors.

HAMPDEN PAINT & CHEMICAL CO., Springfield, Mass.

Paper Making Machinery.

SMITH, WINCHESTER & CO., South Windham, Ct.

THE SIBLEY MACHINE CO., Norwich, Conn.

Rags, Paper and Paper Stock.

BULKLEY, RAIGUEL & CO. (Late with J. G. Ditman & Co.), 22 South Fifth and 500 and 502 Minor st., Philadelphia.

BUTLER, THOMAS, Cotton and Woolen Rags, Iron and Metals. 249 Causeway st., Boston, Mass.

BRODERICK BROS., 608-614 W. Pratt St., Baltimore.

ELLIOT, A. G., & Co., Paper and Paper Stock, 32 and 34 South Sixth st., Philadelphia.

LANEY, JAMES, & CO., Dealer in Paper and Paper Stock, Cotton and Woolen Rags, Rochester, N. Y.

RICHMOND, F. H., & CO., Paper and Paper Stock Warehouse, Cotton Waste Dealers, Providence, R. I.

SIMMONS, JOHN, Wholesale Dealer in Paper and Rags, 20 and 22 Decatur street, Philadelphia.

SNIDER'S, LOUIS, SONS, Manufacturers and Wholesale Paper Dealers, 121 Walnut st., Cincinnati, Ohio.

WILLCOX, JAMES M., & CO., Wholesale Commission Paper and Rag Warehouse, 500 Minor street, Philadelphia, Pa.

Rosin for Paper Makers.

E. E. CLARK is at first hands for perfectly clean Batting Strained Rosin for Paper-Maker's use. Orders solicited. 5 Custom-House St., Boston, Mass.

Screen Plate Manufacturers and Repairers.

HARDY & PINDER, manufacturers of Patent Cast-Metal Sectional Screen Plates. Fitchburg, Mass.

JUDSON, A. C., & WILLIAMS, successors to Howard Judson, Holyoke, Mass., manufacturers of Patent and the ordinary Screen Plates.

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Straw Boards.

TUCKER'S, E., SONS, Straw Boards, Paper, Twines, Paper Box Mach'y, 100 Trumbull st. Hartford, Conn.

Wholesale Paper Dealers.

MOORE & STARK, Wholesale Paper. 637 West Main Street, Louisville, Ky.

IMPORTS AT NEW YORK.

FOR THE WEEK ENDED SEPTEMBER 21, 1888.

An. Colors..	600	$37,670	Paper.....	1,070	$55,348
Alum.....	75	258	Steel Pens...	2	2,589
Alum's Cake	—	—	Stationery...	15	1,047
Bl. Powders.	472	5,526	Slate Pencils	16	104
Soda Ash...	1,855	19,160	Clay.....	—	11,304
Soda, Caus..	1,406	13,460	Jute Butts...	3,312	14,913
Soda, Sal....	1,638	3,330	P. Hangings	4	318
Ultramarine.	22	699	Paper Stock.	4,139	66,566
Books.....	307	47,351	Terra Alba..	200	743
Newspapers.	109	3,852	Waste.....	62	15,331
Engravings.	51	11,075	Wood Pulp..	8,090	26,024
Ink.....	145	3,137			
Lead Pencils	14	2,712	Totals....	23,621	343,307

Imports General Merchandise for the week ended September 21, 1888..... $6,231,831

IMPORTS OF PAPER STOCK AT NEW YORK.

JANUARY 1 TO SEPTEMBER 25, 1888.

Whence Imported.	Rags.	Old Papers.	Chemical Fibre.	Ground Wood.	Manilla Stock.
	Bales.	Bales.	Tons.	Tons.	Bales.
Alexandria....	1,183	—	—	—	—
Amsterdam....	—	—	42	—	—
Antwerp.....a	936	380	042	—	1,752
Arendal.....	—	—	—	300	—
Aspinwall.....	200	—	—	—	—
Bordeaux	1,888	—	—	—	60
Bremen.....b	2,824	62	—	—	1,720
Bristol.....	—	—	—	—	2,840
Calcutta	—	—	—	—	8,172
Christiania.. .	65	—	2,565	3,194	666
Copenhagen...	382	—	1,461	1,053	—
Drammen.....	—	—	—	1,236	—
Dundee.....	130	1,298	20	—	11,424
Fiume.....	—	—	135	—	—
Geestemünde.	86	—	—	—	234
Genoa. c	396	—	—	—	2,553
Glasgow.....	121	889	—	—	—
Gothenburg ...	139	10	815	800	456
Hamburg.....	1,238	139	22	—	973
Havre	10	—	12	—	240
Hiogo.....	5,147	—	—	—	—
Hull.....d	13,456	1,399	1,040	878	10,530
Leghorn.....	4,690	—	—	—	—
Lisbon.....	26	—	—	—	138
Liverpool....e	1,738	1,822	53	—	10,243
London.... f	19,922	9,962	1,562	701	16,920
Marseilles.....	669	118	—	—	804
Naples.....	60	—	—	—	—
Newcastle.....	—	—	605	—	1,134
Newport.... .	—	—	—	—	310
Pillau.....	3,014	—	—	—	43
Rotterdam....	—	89	246	—	474
Stettin	5,010	179	3,441	1,533	1,539
Swinemünde.	434	84	447	—	243

a. Including 64 bs. flax waste and 132 bs. cotton waste.
b. Including 141 bs. cotton waste.
c. Including 96 bs. cotton waste and 375 bs. flax waste.
d. Including 1,332 bs. cotton waste and 375 bs. flax waste.
e. Including 608 bs. cotton waste.
f. Including 357 bs. cotton waste and 790 bs. flax waste.

NEW YORK IMPORTS.

FROM SEPTEMBER 18 TO SEPTEMBER 25, 1888.

Paper Stock.

J. W. Lyon & Co., Hekla, Christiania, 19 tons chemical fibre.
James Pirnie, Galileo, Hull, 102 bs. bagging, 57 tons chemical fibre.
Burgass & Co., by same, 20 bs bagging.
Perkins, Goodwin & Co., by same, 168 bs. rags.
Augustine Smith & Co., by same, 72 bs. rags.
Neumark & Gross, by same, 202 bs. rags.
Perkins, Goodwin & Co., Tower Hill, London, 216 bs. rags.
Atterbury Brothers, by same, 208 bs. rags.
John H. Lyon & Co., Denmark, London, 20 bs. rags.
Atterbury Brothers, by same, 85 bs. rags.
Lewy Brothers, by same, 160 bs. rags.
A. Wertheim & Co., by same, 88 bs. rags, 35 bs. papers, 67 bs. bagging.
Lewy Brothers, Fortuna, Pillau, 855 bs. rags.

Paper.

L. De Jonge & Co., Rhaetia, Hamburg, 14 cs.
E. & H. T. Anthony & Co., by same, 11 cs.
F. C. Mensing, by same, 8 cs. colored.
A. Jacoby & Co., by same, 1 cs.
Marcus Ward & Co., State of Nevada, Glasgow, 7 cs.
C. H. George, Gallia, Liverpool, 1 cs. hangings.
F. Muller & Co., Waesland, Hamburg, 10 cs.
Merchants' Dispatch Company, by same, 12 cs.
Luckmeyer, Schefer & Co., by same, 1 cs.
L. De Jonge & Co., by same, 8 cs.
Roth & Lips, by same, 5 cs.
Buchanan, Bromley & Co., by same, 12 cs.
L. De Jonge & Co., Wieland, Hamburg, 5 cs.
Dingelstedt & Co., by same, 21 cs.
A. Haug & Co., by same, 14 cs.
G. Gennert, by same, 9 cs.
T. Ottmann, Trave, Bremen, 4 cs.
A. & C. Kaufmann, by same, 3 cs.
Kaufmann & Strauss, by same, 6 cs.
H. H. Hayden, Etruria, Liverpool, 5 cs. hangings.
L. De Jonge & Co., Zaandam, Rotterdam, 3 cs.
Hermann Isaac, La Champagne, Havre, 6 cs.
Allen & Ginter, by same, 12 cs.
Kaufmann & Co., Elbe, Bremen, 2 cs.
Dennison Manufacturing Company, Wisconsin, Liverpool, 2 cs.
J. C. Bloomfield & Co., by same, 2 cs.

EXPORTS of Paper, &c., from New York for the Week Ended September 25, 1888.

BOOKS, cases, to Nova Scotia, 1; to Mexico, 1; to Havre, 2; to United States of Colombia, 2; to British Australasia, 31; to Central America, 7; to London, 13; to Asia, 5; to British West Indies, 4; to Bremen, 3; to British East Indies, 10; to Ecuador, 1; to Hamburg, 11; to Peru, 1; to Santo Domingo, 1.

PAPER, to British West Indies, 23 cs.; to Central America, 4 cs.; to Cuba, 8,500 rms., 14 pkgs.; to Hamburg, 10 cs.; to Venezuela, 1 cs.; to Liverpool, 8 bdls., 24 cs.; to Mexico, 801 rms., 1 cs., 27 pkgs.; to Rotterdam, 111 pkgs.; to Santo Domingo, 180 rms., 12 cs.; to British possessions in Africa, 1 cs.; to British Australasia, 31 cs.; to Bradford, 1 cs.; to Bremen, 50 pkgs.; to Canada, 1 cs.; to Ecuador, 1 cs.; to Genoa, 4 pkgs.; to Glasgow, 20 pkgs.; to Hayti, 16 pkgs.; to Hull, 6 cs.; to London, 175 cs.; to British West Indies, 9,661 rms.; to Newfoundland, 3 cs.; to Peru, 7 pkgs; to Porto Rico, 3 pkgs., 2,750 rms.; to Schoenenwerd, 3 cs.; to United States of Colombia, 93 pkgs.

STATIONERY, cases, to Central America, 14; to Bremen, 2; to Liverpool, 38; to Cuba, 13; to London, 85; to British Australasia, 57; to Mexico, 9; to United States of Colombia, 1; to Peru, 3; to Chili, 4; to Hayti, 2; to Havre, 1; to British West Indies, 7; to Dutch West Indies, 1; to Ecuador, 4; to Hamburg, 12; to Porto Rico, 2; to Santo Domingo, 3.

AGGREGATES AND VALUES.		
Paper, reams..	21,892	$3,895
Paper, pkgs.....	344	4,801
Paper, cases.....	304	4,911
Books, cases.....	93	8,041
Rosin, bbls.....	3,949	5,787
Stationery, cases	338	16,175
Totals.....	26,920	$43,610

Exports General Merchandise for the week ended September 25, 1888..... $6,773,571

BOSTON IMPORTS.

FROM SEPTEMBER 20 TO SEPTEMBER 26, 1888, INCLUSIVE.

Books.

Mrs. Durant, Pavonia, Liverpool, 1 cs.
Little, Brown & Co., by same, 3 cs.
Harvard College, by same, 1 cs.

Paper, &c.

J. H. Dannell, Pavonia, Liverpool, 1 cs. paper.
A. H. Roffe & Co., by same, 5 bs. periodicals.
A. W. Elston & Co., by same, 1 cs. almanacs.
Wood, Pollard & Co., Stockholm City, London, 1 cs. show cards.

Paper Stock.

Atterbury Brothers, Waldensian, Glasgow, 71 bs. paper stock.
Train, Smith & Co., by same, 302 bs. rags, 90 bs. paper stock.
Stephen Lee, Stockholm City, London, 281 bs. rags, 53 bs. paper stock.
Train, Smith & Co., by same, 214 bs. rags, 48 bs. paper stock.
Horace Dutton, by same, 353 bs. rags, 264 bs. and 51 coils manilas, 175 bs. paper stock.
Crocker, Burbank & Co., by same, 139 bs. paper stock.
S. D. Warren & Co., by same, 149 bs. rags.
M. A. Castle, by same, 43 bs. rags.
M. A. King & Sons, by same, 53 bs. manillas.
Order, by same, 86 bs. paper stock.
Stephen Lee, Gothenburg City, Antwerp, 231 bs. rags.
Horace Dutton, by same, 412 bs. rags, 882 bs. manilas.
Train, Smith & Co., by same, 183 bs. rags, 177 bs. manillas.
Delong & Seamen, by same, 48 bs. rags.
W. A. Castle, by same, 192 bs. rags.
Charles A. Cheney, Michigan, Liverpool, 53 bs. rags, 869 bs. manillas.
Train, Smith & Co., by same, 607 bs. rags, 112 bs. manillas, 171 bs. paper stock.
Horace Dutton, by same, 17 bs. manillas.
W. A. Castle, by same, 9 bs. rags.
T. Remick & Co., by same, 97 bs. manillas.
G. N. True, by same, 70 bs. paper stock.
Neumark & Gross, Santiago, Hull, 264 bs. rags.

Wood Pulp.

Morey & Co., Stockholm City, London, 250 bs.
Perkins, Goodwin & Co., Gothenburg City, Antwerp, 859 bs.

Bleaching Powders.

Warren & Co., Michigan, Liverpool, 256 cks.
E. & F. King & Co., by same, 33 cks.
J. L. & D. S. Riker, Pavonia, Liverpool, 172 cks.

Caustic Soda.

Warren & Co., Michigan, Liverpool, 440 drums.
Order, Chicago, by same, 300 drums.
Robert Crooks & Co., Pavonia, Liverpool, 50 drums.

Soda Ash.

Warren & Co., Michigan, Liverpool, 84 cks.
Linder & Meyer, Pavonia, Liverpool, 148 cks.

Soda Crystals.

Warren & Co., Michigan, Liverpool, 140 bbls.
E. & F. King & Co., by same, 140 bbls., 400 kegs.

Sizing.

W. A. Castle, Michigan, Liverpool, 344 bs. hide cuttings.
Train, Smith & Co., Gothenburg City, Antwerp, 174 bags.

PHILADELPHIA IMPORTS.

FOR THE WEEK ENDED SEPTEMBER 22, 1888.

Paper Stock.

Brown Brothers & Co., Manitoban, Glasgow, 69 bs. papers.
Jessup & Moore Paper Company, Maine, London, 222 bs. papers.
Order, by same, 213 bs. rags, 66 bs. papers, 318 bs. jute.

Chemicals, &c.

James Lee & Co., Edwin, Shields, 153 cks. soda ash.
Fergusson Brothers, by same, 767 cks. soda ash, 99 cks. alkali, 259 drums caustic soda.
Edwin Hill, Son & Co., by same, 164 cks. bleaching powder.
Joseph I. Keefe, by same, 1,085 cks. and 896 kegs sal soda.
Order, by same, 250 bbls. venetian red.
Wing & Evans, Camellia, Liverpool, 160 cks. soda ash.
Charles Lennig & Co., by same, 180 drums caustic soda.
Fergusson Brothers, by same, 314 cks. china clay,

F. M. SPAULDING,
CONTRACTS FOR
News and Book Paper in Quantity,
40 STATE STREET,
Room 39. Boston, Mass.

TRAIN, SMITH & CO.,
IMPORTERS OF AND DEALERS IN
— ALL DESCRIPTIONS OF —
Paper Makers' Supplies,
24 FEDERAL STREET, BOSTON.
BRANCH OFFICES: 36 BEEKMAN STREET, NEW YORK. 21 ST. MARY AXE, E. C., LONDON. EDMUND ST. CHAMBERS, LIVERPOOL.

WM. J. CORBETT & CO.,
Successors to BARLOW & CO.,
WHOLESALE DEALERS IN AND PACKERS OF
Woolen Rags and Paper Makers' Supplies,
287 and 289 SOUTH STREET, and 66 and 68 UTICA STREET,
THE OLD STAND, BOSTON, MASS.
WOOLEN RAGS GRADED IN COLORS AND QUALITY.

ROZÉS BROTHERS,
—PACKERS AND SHIPPERS OF—
RAGS AND PAPER STOCK
OF EVERY DESCRIPTION,
Agen (France).
NEW YORK OFFICE: TRIBUNE BUILDING.

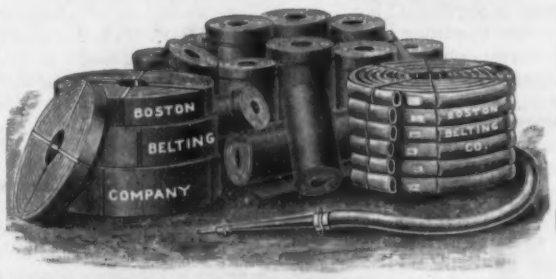
STEPHEN LEE,
Morse Building, New York,
IMPORTER OF AND DEALER IN
Paper-Makers' Supplies.

General Chemical Analyses made with accuracy and dispatch, and special attention given to Paper Mill Work.
GRIFFIN & LITTLE,
Paper Mill Chemists,
103 MILK ST., BOSTON.
EXPERTS in the Sulphite Processes. New Woods and Fibres treated by any chemical process. Practical results obtained.

F. BREDT & CO.,
No. 194 Fulton Street, SOLE AGENTS FOR New York City, U. S. A.
JOSEPH PORRITT & SONS'
ENGLISH FELTINGS.
TRADE-MARK.
SOLE IMPORTERS OF
MARINE BLUE (Aniline) for Newspaper Mills.
Jacketing, Roll Cloth, Double Extra Canvass, Ultramarine Blue.

ESTABLISHED 1827.
LOMBARD & CO
IMPORTERS AND DEALERS IN
GRINDSTONES
Office, 161 Pearl Street, Boston,
IMPORTED GRINDSTONES for GRINDING WOOD PULP A SPECIALTY.

REGISTERED TRADE MARK.
LIVERPOOL MARINE L.M.S. STORE CO
MANILA.
MANILA ROPE.
The Celebrated Pack of this firm may always be known by this Trade Mark on Wooden Tags.
ALL KINDS OF ROPE AND JUTE STOCK.

BOSTON BELTING CO.,
New York. Established 1828. Boston.


256 to 260 Devonshire St., Boston.
100 Chambers St., New York.
109 Madison St., Chicago.
2 & 4 California St., San Francisco.
ORIGINAL MANUFACTURERS.
Rubber Belting, Hose, Packings. Rubber Rolls—Press, Sizing, Couch.
DECKLE STRAPS. FIRE HOSE—RUBBER, COTTON, LINEN.
Sole Manufacturers, "IMPERIAL" Sewed Rubber Belting.

The Paper Trade Journal.

DEVOTED EXCLUSIVELY TO THE INTERESTS OF

The American Paper Trade.

Weekly, $4.00 per Annum.

Single Copies, . . . 10 Cents

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S. Bernard	Venice and Florence, Italy.
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I. D. Clark	Shanghai, China.
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All Pioneer Publications.
HOWARD LOCKWOOD & CO.,
126 & 128 DUANE ST., NEW YORK.

GERMAN paper makers, it is said, want an exhibition, presumably one where they can make the most of their wares and derive the chief benefit. We fear that to do this they must operate at home and retain control. It is reported that they are not satisfied with the results of the Barcelona Exhibition and it is notorious that their reputation at Philadelphia in 1876 suffered and that they were not pleased thereat, while the coming Paris Exposition will be still less to their liking. Faring so ill in competitive exhibitions their resource is obviously to hold a show which will be exclusively their own, and then they may avoid the discomfiture which has hitherto been their portion.

THE illustration on the first page of this issue shows the design of a machine for reducing paper pulp. This apparatus is obviously intended as a refining engine, and bears a resemblance to something similar which was devised several years ago for flour milling purposes. The pulp, entering the machine at the top, flows downward through the eye of the first stationary plate, passing over the face of the runner and thence in succession to each series of reducing disks, being acted upon by each in turn, until it reaches the lower compartment of the engine, whence it is discharged. The grinding action of the disks is supposed to bring the pulp into proper condition for final treatment in its conversion into paper. We leave this apparatus to the consideration of our readers.

AUGUST statistics of the Treasury Department show continued weakness in the merchandise export movement, while the imports are generally well sustained. The balance of trade against us for the twelve months ended with August amounts to more than $36,000,000, and this is only $10,000,000 short of the exports for the month mentioned itself. The figures given for a series of years show that there has been a steady increase in import values for the past three years, ranging closer year by year to the exports and now surpassing them. The change in the tariff made in 1883 is largely responsible for this, the increase in the imports of manufactured articles which compete with our own products being notable in several instances. This suggests the possibility, if not the probability, that the difference in favor of imports will become more pronounced in case the proposed tariff changes shall be carried into effect. There is, however, another consideration likely to favor the export statements for the next few months to come. This is in the probable increase of the shipments of our cereals to Europe; but in the line of manufactured goods there is reason to believe that the difference will be well kept up.

A SUBSCRIBER to THE JOURNAL writes as follows: "Do not be so cock sure about the beauties of high duties. The consumers of paper who have to pay them feel that they have or should have something said about their right to get all they can for their labor. This side of the question does not often appear in your paper." To this we have only a few words in reply. Our correspondent asserts a truism when he intimates that consumers have the right to "get all they can for their labor"—or, for that matter, for their money. We never supposed that it was necessary to argue in favor of an axiom. We concede that point at once; but we do say that with free trade the consumer will not get any more for either his labor or money, and in all probability will not get as much as under a system which helps to build up industries, to stimulate competition and to reduce the cost, while it helps to increase the consumption of the manufactured article without cutting short the ability of the consumer to buy. If there is any one manufactured article from which the public in general, and our correspondent particularly, has derived a benefit by reason of a tariff on foreign competing products, it is paper. But taking another view of the question, we have only to say that American manufacturers and American workingmen have equal rights with the consumers of their products, and are entitled to that share of protection which some consumers who oppose them are disposed to deny.

IF the points made in favor of the electrical bleaching process shall be sustained, one of the greatest successes in modern paper making will have been achieved. The description of the electrolytic decomposition of a chloride in last week's issue and of the method of applying the bleaching solution thus effected which appears in our columns to-day is fraught with great interest to the trade, and we cannot but express our pleasure with the clear, comprehensive and satisfactory outline of the process as given by our contributors. The great cheapening promised in the cost of bleaching, not to speak of the effectiveness of the agency employed, is a feature which by itself will command attention. The rapid action of the electrolyzed solution, and the failure to impair the strength of the fibre, will also be gratifying to the paper maker. It is true, as remarked by our contributors, that the process has met with its opponents, but this can be said of every great departure from precedents or established usages, no matter how useful or valuable the change may be. Disputants cannot defeat its claims if results are obtained as asserted, and the evidence placed before us has up to this time justified belief in the great practical value of the system of bleaching by electrolysis.

Watermarks.

BY DANDY.

That was an interesting description of the principles by which electro chemical processes are carried out. I am impatient to read the next and promised article on this subject. Neither am I alone in this desire. The electric bleaching process appeals strongly to paper makers, and the explanations given are much appreciated.

More mills and more improvements were noted last week, and these are not all. I hear intimations of more promised and of some others under way. I presume that Lockwood's Directory will show considerable accessions in its next edition.

The German legal authorities have now declared that not only the chemical process, but the matter itself obtained thereby, will henceforth be protected by a German patent.

The situation in the jute market seems to have blossomed out in full this week, and the various markets are astir. Prices have been advancing steadily, and yesterday there was a sale on spot at 2 1-16 cents. There is an uncertainty in many minds as to how long this course is to continue. Some argue that holders will maintain and even advance figures, while others are equally certain that the bottom will drop out, leaving things to go to the "demnition bowwows" generally.

Jute butts are generally in strong hands, and there are now about forty thousand bales of paper quality butts here.

As to bagging butts, there is a good supply, but the consumption will be very materially cut down, for the reason that the weavers of new bagging are to shut down their mills on November 1 and will not start up again until March 1.

By this time the new crop will have put in its appearance. Eight thousand bales of the new crop are now loading at Calcutta.

The action of the bagging combination has brought about a "booming" state of affairs, and owing to the high price of new wrappers some old gunny is being worked over. On this score one hears of fancy prices offered for gunny to go South, and there are said to have been sales at as high a figure as 2¼ cents. These facts, combined with the advance in raw jute, have raised the ideas at primary sources and here, and the final result is not at all favorable to the paper maker, who sees his raw material advancing in price through the operation of circumstances wholly outside of his branch of trade.

Based on this it is predicted that as to all jute papers values will go up within thirty days, and that as to others more wood pulp will be used. And I guess that is about it.

Talking about gunny going South, I am reminded that the bagging combination is keeping a very sharp eye on all such lots and shipments are very closely watched. A very good authority says that in doing this the combination is only looking after its own property, and that a little later, say about the time the canals close, nearly all of this material will be thrown on the market again for paper makers to buy.

Not only are jute stocks high, but so are bleaching powders and caustic soda, the makers of the latter having combined and arranged for a shut down.

During the coming week a Harrison, Morton and Miller Club is to be formed in the paper trade, and the meeting to organize the same is to be held on Tuesday afternoon. Now for an opposition club.

A couple of paper stock importers were discussing auction sales this week, when one of them said that there was only one way to make money at an auction sale. "How is that?" asked the other. "By staying away from it," replied the first.

The Germans are naturally a very sparing people. Old newspapers, dirty written papers, copy books, &c., are not exactly what the average citizen here would like to have his butter or groceries put up in. Despite all the complaints, niggardliness rules. A gentleman writing to a Breslau paper seems to have lost patience, not at the appearance of the cover of his purchases, but at what was written thereon. It was the whole history of a judicial divorce case dating from 1868. The particulars were so exhaustive that the writer though that such literature was not exactly appropriate for "olive branches."

Trade Talks.

J. F. Walker, of F. R. Walker & Co., New York.—Business in the manilla line is not brisk and orders are not coming to hand as fast as we could desire, but there is a decided improvement in the white paper market. Jute butts and bagging are high and the tendency is to still higher values. I believe that raw material will be further advanced, for everything is in favor of it. Makers of manilla papers are not making any money at present prices, and there is no reason why they should not get more for their goods.

J. M. Waterbury, of L. Waterbury & Co., New York.—Yes, there was a meeting of manilla paper manufacturers here this week. The present position of affairs in the jute butt and bagging markets was discussed and the feeling of those present was that there was no faith to be placed in the high prices now ruling. So it is reported that there was an understanding that the manufacturers should remain out of the stock market as long as possible. Well, as against that there have been purchases of stock made since the meeting. So far as I know the mills making manillas are well supplied with stock.

Changes, Removals and New Firms.

A. Miller, stationer, Greenville, Ohio, has sold out.

D. E. Soper, newsdealer, &c., Newaygo, Mich, has sold out.

The Lincoln *News* Company, printer, Lincoln, Neb., has sold out.

A. C. Brown, bookseller and stationer, Superior, Wis., has sold out.

William Penry, publisher of the *Dispatch*, Jackson, Cal., has sold out.

Virtue & Cogan, printers, St. Paul, Minn., have dissolved partnership.

W. Beckler, dealer in books and stationery, Sioux Falls, Dak. Ter., has sold out.

Harrison, Lawton & Co., publishers of the *Christian Index*, Atlanta, Ga., have sold out.

John R. Wilkinson & Brother, wholesale and retail stationers, Atlanta, Ga., have sold out.

L. A. Stone & Co., dealers in paper stock, &c., Cleveland, Ohio, have dissolved partnership.

S. U. Hancock & Brother, publishers of the South Omaha *Times*, South Omaha, Neb., have sold out.

Burnett & Sons, publishers, Madison, Wis., have been succeeded by the *News* Printing Company.

Chadborne & Co., dealers in paper hangings, &c., Ripon, Wis., have been succeeded by F. M. Lampson.

The Flambeau Water Power Company has been formed at Flambeau, near Fifield, Wis., for the purpose of manufacturing wood pulp and paper.

The Byron Weston Company, of Dalton, Mass., for the manufacture of paper, has been incorporated, with a capital of $200,000. Hon. Byron Weston is president and treasurer.

The stationery and book business carried on by Welch & Agar, Albany, Ga., has been purchased by the Hilsman & Agar Company, of which Dr. P. L. Hilsman is manager and Richard Hobbs is treasurer.

Failures.

Mary A. Louthood, stationer, Three Rivers, Quebec, has made an assignment.

William O'Connell, dealer in wall paper, 251 West 125th street, New York, has assigned.

Athey & Gardner, dealers in paper hangings, &c., Columbus, Ohio, have made an assignment.

Louis Rubens, stationer and printer, Chicago, Ill., has been closed out under foreclosure of chattel mortgage.

The Sioux City Engraving Company, Sioux City, Ia., has been closed out under foreclosure of chattel mortgage.

The *Sunday Dispatch* Company (Limited), publisher of the *Sunday Dispatch*, Philadelphia, Pa., is in the hands of the sheriff.

John Burrows, dealer in paper hangings at 8 South Charles street, Baltimore, Md., made an assignment for the benefit of his creditors on Saturday, the 22d inst., to Charles M. Bainbridge, who gave a bond as trustee for $50,000. The cause of the failure is said to be competition and slow collections.

The condition of the affairs of the Mural Decoration Paper Company, at New Brunswick, N. J., which suspended lately, is worse than was anticipated. The Chancellor will be asked to appoint a receiver. The debts of the company are about $35,000, five securities of which are held by the two national banks of New Brunswick. The stockholders will realize about 25 per cent. of their stock. The creditors will be paid in full.

Fires

Alexander Meldrum, stationer, &c., Wayne, Mich., has been burned out. Loss, $200; not insured.

Obituary.

W. W. Fulton, a veteran newspaper man, died on Wednesday, September 26, at the residence of his daughter, Mrs. Scott, in Philadelphia. He had gone to that city, broken in health from close application to business, in hopes that a change of scene with complete rest would result in a restoration to health, but his constitution could not recuperate and he died from general debility. Mr. Fulton was seventy-five years of age and a native of Philadelphia. He entered the field of journalism in early life, and for many years held the position of agent of the Associated Press in Philadelphia. On his retirement in 1874 he went to Baltimore, and had since been engaged in journalism in that city and Washington. He was a brother of the late Charles C. Fulton of the Baltimore *American*.

Henry E. Huber, of the firm of Henry E. Huber & Son, printers, Baltimore, Md., is dead.

Personals.

Felix Salomon, of Gebrüder Salomon, paper stock packers, Harburg, Germany, is expected to arrive here next week on the Werra.

Ethan Allen Doty, of Doty & McFarlan, delivered an interesting address before the Brooklyn Young Men's Republican Club on Thursday evening last.

John J. Osborn, of the Stafford Printing Company, New Haven, Conn., is about to dispose of his interest in that company and spend the winter at the South.

Joseph L. Pierson, New York salesman for Train, Smith & Co., delivered an address before the New York Red Bandanna Club on Wednesday evening last.

William F. Kellogg, of the Acme Stationery and Paper Company, was married to Josephine Clements Tanner, in St. Paul's Episcopal Church, North Andover, Mass., on September 19. The happy couple were the recipients of many presents, one being a very elegant clock, presented by Mr. Kellogg's coworkers.

In Town

James Symington, Lancaster, Pa.; J. A. Kimberly, Appleton, Wis.; Moses Newton, Holyoke, Mass.; C. S. Wheelwright, Providence, R. I.; J. O. Wagner, Easton, Pa.; S. D. Beach, Seymour, Conn.; T. S. Safford, Camden, N. J.; J. M. Johnston and C. H. Wardlow, Middletown, Ohio; Mr. Maybee, Ballston, N. Y.; L. M. Howland and J. E. Howland, Sandy Hill, N. Y.

Mortgages, Etc.

[In the appended list R. signifies a renewal of a pre-existing mortgage; B. S., bill of sale; and Real, a mortgage on real estate.]

Mortgagor.	*Amount.*
NEW YORK CITY.	
G. W. Rodgers & Co	$854
EASTERN STATES.	
Thomas C. Stephenson (Robinson & Stephenson), Boston, Mass	315
E. A. Ford, Chelsea, Mass	400
Schweppe & Eninger, Northampton, Mass	302
Louis H. Kidder & Co., Holyoke, Mass	100
MIDDLE STATES.	
Charles R. Parker, Jersey City, N. J	300
Thomas C. Murray, Herkimer, N. Y. (Real)	100
WESTERN STATES.	
Thomas R. Burns, Oakland, Cal. (Real)	400
William B. Thorn, publisher *Comet*, Red Cliff, Col	529
W. F. Purtill, Mattoon, Ill	1,164
H. A. Cook, publisher *Bulletin*, Denison, Ia	800
E. E. Davis, Des Moines, Ia	393
Morris & Pegg, Coolidge, Kan	135
C. M. Bay, publisher *Daily and Weekly Courier*, Kingman, Kan	1,953
Miller & Tilley, Wichita, Kan	525
Allen Collier, Cincinnati, Ohio	600
Hennegan & Co, Cincinnati, Ohio (R.)	1,800
TERRITORIES.	
William Mase, Cheyenne, Wy. Ter	2,500
LIENS RELEASED.	
Henry C. Stillwell (Hartling, Phillips & Stillwell), San Francisco, Cal	4,000
Buchanan & Co., Grand Rapids, Mich	....

General Notes.

A conference of manilla paper manufacturers was held at the office of L. Waterbury & Co., 134 Front street, on Tuesday of this week. J. M. Waterbury presided, and among those present were Mr. Maybee, of George West, Ballston, N.Y.; Moses Newton, Chemical Paper Company, Holyoke, Mass.; J. M. Johnston, Middletown Paper Company; J. B. Tytus, Tytus Paper Company, and C. H. Wardlow, Wardlow-Thomas Paper Company, Middletown, Ohio; A. L. M. and J. E. Howland, of Howland & Co., Sandy Hill, N. Y. The positions of the jute butt and bagging markets were discussed. The meeting was secret, but those present expressed themselves as having no faith in the ruling prices of stock.

A fund for the relief of the yellow fever sufferers in Jacksonville, Fla., has been started by the Stationers' Board of Trade. It now amounts to $1,650 and the subscribers are: Boorum & Pease, $100; Liebenroth, Von Auw & Co., $100; D. Slote & Co., $10; Raynor & Martin, $10; Henry Bainbridge & Co., $25; Koch, Sons & Co., $100; Agar, Hamblin & Co., $10; Perkins, Goodwin & Co., $25; E. F. Horsman, $10; Tower Manufacturing Company, $50; S. S. Stafford, $10; Brower Brothers, $10; Ives, Blakeslee & Co., $10; Acme Stationery and Paper Company, $20; S. E. & M. Vernon, $25; Kiggins & Tooker Company, $50; Bulkley, Dunton & Co., $100; Elliott Manufacturing Company, $10; Selchow & Righter, $50; John Gibson, $10; Berlin & Jones Envelope Company, $20; G. B. Hurd & Co., $25; Ph. Hake, $25; Eberhard Faber, $50; E. Posen & Co., $10; McLaughlin Brothers, $25; White & Allen, $10; George Routledge & Sons, $25; Charles T. Dillingham, $25; the Baker & Taylor Company, $10; the Strobel & Wilken Company, $10; American Lead Pencil Company, $10; Charles Scribner's Sons, $25; Dodd, Mead & Co., $25; James Pott & Co., $10; E. & J. B. Young & Co., $25; Macmillan & Co., $25; Thomas Nelson & Sons, $50; Willy Wallach $25; John J. Lindsay & Co., $10; Whiting & Sons, $10; Byron Weston, $25; B. Ill-

felder & Co., $25; the Robert Graves Company, $25; Pratt & Hansen, $5; L. Prang & Co., $10; S. Trier & Son, $10; Cassell & Co., $25; Z. Crane, Jr., & Brother, $25; A. Dougherty, $50; Asa L. Shipman's Sons, $10; Fr. Beck & Co., $25; D. Appleton & Co., $100; Henry Lindenmeyr, $50; F. A. Stokes & Brother, $10; E. P. Dutton & Co. Some members of the board, particularly those residing in the East and in Philadelphia, have contributed through other sources.

Determination of Free Acid.

In aluminous cake and sulphate of alumina there is almost invariably a smal percentage of acid uncombined with the alumina. This free acid, if only a very small amount, is considered deleterious, and it is therefore very necessary for a paper makers' chemist to be able to estimate it even to 0.05 per cent.

In the ordinary way a free acid is analyzed by running into a weighed quantity of the acid, colored red by litmus, a solution of soda of a known strength, till the red color changes to purple, and a further drop of soda solution gives a blue.

This process, however, cannot be carried out directly with compounds containing salts of alumina, as part of the soda would be used in separating and combining with some of the acid previously combined with alumina, and therefore no correct result could be obtained by this direct mixture.

It is necessary, before we attempt to determine the acid in these compounds, to find some liquid which will dissolve it without dissolving the salt of alumina.

The liquid used is what is known as absolute alcohol—that is to say, it is supposed to be pure alcohol, containing no water.

Four grams of the sample to be examined are taken, put into a dry glass mortar, and covered with absolute alcohol and well stirred, and afterward allowed to stand for a short time to settle. Filter and wash the material on the filter three times with absolute alcohol, from a bottle with a very fine jet, made on the same principle but much smaller than the distilled waterwash bottle described in a previous paper. The jet of the alcohol wash bottle is small, in order that the material can be well stirred up and washed round on the filter paper, without an excessive quantity of alcohol being used.

The clear filtrate is then evaporated down over a water bath. The Bunsen burner must never be used to directly heat the vessel containing the alcohol. In a properly fitted laboratory a small glass flask is used to receive the filtrate, and this, after the washings are complete, is connected with a receiver and distilled in order not to waste the alcohol.

The apparatus for this operation is what is known as a Liebig's condenser, and is usually a glass tube surrounded by a larger iron or glass tube, through which latter a current of cold water is kept passing, entering at the lower and flowing out at the higher end, the action of this water being to keep the inner tube cool, and so allow the vapors passing into it to cool down to liquids and flow into the receiving bottle at the lower end.

The flask is joined on to the inner tube by a moderately wide glass tube, bent in an L shape, one end of which just passes through a cork in the flask, and the other through the cork in the condenser tube.

When connected the flask is lowered into a beaker of water, which is kept just hot enough to cause the alcohol in the flask to boil.

The bottle in which the condensed alcohol drops must be free at the mouth, as if it were joined to the condenser by a cork an explosion would occur. This bottle, in warm weather, should be kept surrounded by cold water, otherwise a large quantity of alcohol will escape, and may be ignited by the Bunsen which is used for heating the water. In fact, the greatest care must always be taken to keep the alcohol away from lights, even when it is in the liquid state. The bottle containing it must always be kept in the coolest part of the laboratory, away from the fire and gas burners, a precaution which beginners are apt to forget, especially when they are using the alcohol in analysis. After all the alcohol has been evaporated the flask is taken from the condenser and a small quantity of distilled water added and shaken round, so as to collect and dissolve the acid, which has, of course, too high a boiling point to distil over, as did the alcohol. A drop of neutral litmus solution is then added, which gives the liquid a red color. It is now ready for filtration in the ordinary way. It is best, however, not to use a normal solution of soda, but a decinormal—that is, a solution containing 3.1 grams of pure Na_2O Then, of course, the solution being only $\frac{1}{10}$ of the strength of a normal solution, the number of c.c.'s taken to produce the purple color will have to be divided by 10; that is, the decimal point moved one place to the left, to give the percentage of free acid contained in the sample.

This decinormal solution can easily be made up from the litre flask of any sample of caustic soda which has been carefully analyzed.

Perhaps the following worked out example will be the easiest way to explain to a beginner the method of making up the decinormal solution:

You have in testing your sample of caustic soda weighed out 31 grams and made up to a litre. You find that 100 c.c.'s of this neutralize, say, 75 c.c.'s of normal acid; you can calculate how many c.c.'s of soda solution will be required to neutralize 100 c.c's of normal acid

$$75 : 100 :: 100 : x$$

$$75)\ 10{,}000\ (133.33$$

75
250
225
250

It will take 133.33 c.c.'s of your soda solution to neutralize 100 c.c.'s normal acid.

But 100 c.c.'s normal acid } — 4 grams So_3 ($\frac{1}{10}$ equivalent.)
" " — 3.1 grams Na_2O ($\frac{1}{10}$ equivalent.)

Therefore the 133.33 c.c.'s of your solution of caustic soda contain exactly the $\frac{1}{10}$ equivalent of Na_2O, which we want in the litre to make a decinormal solution. You therefore measure out this amount into a litre flask, and add distilled water up to the litre mark, shake, and the solution is ready for use. In this method, unfortunately, chiefly through the impossibility of obtaining alcohol absolutely free from water, there is always a small proportion of aluminous salt dissolved, the acid of which makes the result come out too high. It is therefore necessary to make a deduction proportionate to the amount of salt found to have been dissolved by the alcohol. For this purpose, after the quantity of decinormal soda solution is run in and the number of c.c.'s at which the purple color was produced is noted, the flask is removed, to it is added a small quantity of hydrochloric acid, and it is boiled; then a slight excess of ammonia is added, and it is filtered through a very small filter paper, the weight of the ash of this filter paper is known by cutting down to the same size, and burning similar paper.

The precipitate of alumina is washed on the filter with hot water, and afterward burned and weighed as described, under the determination of alumina. For every .001 gram of alumina found, .0588 per cent. of acid must be deducted from the result obtained by the soda solution, in order to obtain the true percentage of free acid.

The absolute alcohol to be used in this process may be made in the laboratory from the ordinary aqueous alcohol by putting the liquid in a retort or flask containing lumps of quicklime and distilling on a water bath, through a Liebig's condenser. The condensed product is the same as what is ordinarily sold as absolute alcohol, but to get the alcohol really absolutely free from water it is necessary to allow this distillate to percolate through tubes containing lumps of quicklime. Naturally, the greatest care must be taken that there may be no suspended lime in the product, or the results of analysis would be entirely erroneous.

In reference to the materials to be analyzed, when the sample contains sulphate of alumina not in the form of alum, as an additional precaution, it is usual to add a sufficient quantity of neutral sulphate of potash after the 4 grams are weighed out and convert it into alum, by stirring round in a mortar with a little distilled water, and drying, before proceeding to extract the free acid by alcohol. This precaution is taken because sulphate of alumina is found to dissolve in the alcohol to a greater extent than alum.—*Paper Recora.*

SPECIAL NOTICES.

[Insertions under this heading will be charged 50 cents a line. Payment invariably in advance.]

THOS. BUTLER & CO.,
Rags, Paper Stock, Old Metals, Rubber,
249-253 Causeway St., Boston, Mass.

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Rags, Paper Stock, Rubber, &c., &c.,
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Market Review.

Office of The Paper Trade Journal,
Friday, September 28, 1888.

THE MONEY MARKET.—The stock market is active and buoyant. Call loans on stock collateral ruled firm at 1½@2 per cent. Mercantile paper was quoted as follows:

	Sixty days.	Four months.
Double-named—		
First-class	5 @ 5½	5 @ 5½
Good	6 @ 6½	6 @ 6½
Single-named—		
First-class	6 @ 6½	6 @ 6½
Good	7 @ 8	7 @ 8
Not so well known	8 @ 9	8 @ 9

The market for sterling was very quiet. Posted rates were $4.84½ for sixty days' and $4.88½ for demand. Rates for actual business were as follows: Sixty days' sight, $4.83¾@4.84; demand, $4.87¾@4.88; cables, $4.88½@4.88¼; commercial, $4.82¼@4.82¾. Continental bills were quoted as follows: Francs, 5.23¾ and 5.20⅝; reichsmarks, 95 and 95⅛; guilders, 40¼ and 40½. Government bonds were strong and higher. Railroad bonds were fairly active.

THE PAPER MARKET.—The situation of affairs in the paper market is unchanged. Local or store trade is quiet, the demand from stationers and printers being light. Out of town trade, however, holds on very well, and there is perhaps more doing in this branch. Mills are for the most part busy. Writings and Book papers are moving at a good rate and prices are steady, while News maintains its position and is in brisk demand. Manilla mills are not rushed, and some of them complain that business is slow. This, together with the high prices of raw materials, brought about a secret conference of some manufacturers this week, at which the position of affairs was discussed, the sense of the meeting being that no faith was to be placed in a continuance of the present high prices. Strawboards are in moderate movement at full prices, and Straw Wrappings are having a good deal of attention, but prices do not show any improvement.

JUTE BUTTS.—The market is firm at 1 15-16@2c. for paper butts on spot, with some small business. For shipment, September and October, some four or five thousand bales have been sold at 2c. The market in Calcutta continues strong. We quote price here at 1 15-16@2c. for Paper quality and 2¼@2⅜c. for Bagging quality.

WOOD PULP.—A good demand is maintained and prices are regular at 1¾@1⅞c. for Domestic Spruce delivered, and 1.50c. for 50 per cent. Wet, ex dock. There was no Ground Wood imported this week.

WOOD FIBRE.—There is a very good sale for Chemical Fibre. Association price on Bleached is still 3¾c. Foreign grades are quoted as follows: Unbleached Pine, soda process, 3@3.30c.; Bleached, same process, 3⅝@4.15c.; Unbleached, sulphite process, 3⅝@4c., and Bleached do., 4½@6¼c.; Bleached Straw Pulp, 4¼@5¼c. There were imported this week 76 tons of chemical fibre, being 19 tons from Christiania and 57 tons from Hull.

FOREIGN RAGS AND PAPER STOCK.—There is somewhat of an improvement in the demand for Foreign Rags, but it is not sufficient to create any stir. Linens are still quiet, but there are some small lots being moved. The improvement noted is mostly for Cottons of low grades. Orders, however, are not large. Imports for the week aggregated 2,298 bales and 76 tons, being 2,074 bs. rags, 35 bs. old papers, 76 tons chemical fibre and 189 bs. manillas. Ports of shipment and quantities are: Christiania, 19 tons chemical fibre; Hull, 442 bs. rags, 57 tons chemical fibre, 122 bs. manillas; London, 77 bs. rags, 35 bs. old papers, 67 bs. manillas; Pillau, 855 bs. rags.

DOMESTIC RAGS.—A fair demand for Domestic Rags prevails, but the market is not active. Prices rule as before and are steady.

BAGGING, &c.—The market for Gunny Bagging is somewhat agitated. The spot stock is well cleaned up, afloats are mostly sold, packers on the other side are well cared for in the way of orders and some decline to accept any further engagements for delivery during the rest of this year. The high rates which have prevailed for new Jute bagging under the regulations of the bagging trust have developed a demand for Gunny for use as wrappers, and in response to this some offers of 2⅛@2¼c. have been made for lots. These prices appear to have excited the market to some extent. There have been sales to paper makers during the past week, including 100 tons to arrive, 300 tons to arrive and 100 tons on spot in Boston, all at 1.90c., while there have been further offers of spot goods in Boston at the same figure. In New York there are offers to sell at 1.95c. There have been sales of 150 tons Continental afloat at 1.60c. Ropes and threads are quiet. On all jute stocks importers are divided greatly in their opinions, some insisting that prices will be maintained, while others are equally positive that in a short time there will be a "slump." Manilla imports for the week aggregated 189 bales, being 122 from Hull and 67 from London.

OLD PAPERS.—The Old Paper market is quiet, there being only a moderate trade in progress. We quote: No. 1 Hard White Shavings, 3½c.; No. 1 Soft White do., 2⅝c.; Old Ledgers, 2½c.; Solid Printed Books 1.60 @1.65c.; Mixed Shavings, 1⅝@1⅝c.; No. 1 Manillas, 1.60c.; Light Book Stock, ¾c.; Folded News, 1⅛@1¼c.; Commons, 60@65c.; Bogus Manillas, 60@90c.; Strawboard Clippings, 60@65c.; Binders' do., 60@65c.

STRAW.—Choice qualities of Straw are coming forward in moderate quantities, and are meeting with fair sales at full prices. We quote: No. 1 Rye at 70@75c.; Short Rye at 45@55c.; Oat at 40@50c.

ROSINS.—Low grades are in steady demand at regular prices. Fine grades are in moderate call and prices are firm. We quote in lots from the yard: Common to Good Strained, $1.25@1.30; E, $1.40@1.42½; F, $1.45@1.47½; G, $1.50@1.52½; H, $1.55 @1.57½; I, $1.65@1.67½; K, $1.75@1.80; M, $1.90; N, $2.20, and W G, $2.85.

CHEMICALS.—There has been a further improvement in the tone of the market for paper maker's chemicals. Bleaching Powder is firmer and prices are slightly higher. The demand is broader, and but for limited supplies more business might be done. The market for Caustic Soda is excited and prices rule higher. Under date of September 15, J. P. Brunner & Co. say from Liverpool: "The combination in caustic soda has ordered through its committee a reduction of one week's make within a month, *i. e.*, the middle of October, and some makers have already commenced to reduce. The trade has on the strength of this bought largely, and prices have advanced to £6@ 6 2s. 1d. for 60 per cent., £7@7 2s. 6d. for 70 per cent., and £7 10s.@7 15s. for 74 per cent. Makers as a rule are sold out for this month and largely sold for next month. Sales are also reported on contract for all next year at £7 for 70 per cent. How long prices will be maintained unless at the same time reduction in the decomposition of salt is made remains to be seen." Caustic Soda Ash, 48 per cent., is quiet, but the tone of the market is firm. Sal Soda is in better demand, but prices are as yet unsettled. During the week there have been sales of 200 cks. Bleach at 2.10c.; 300 tons Soda Ash at 1.30c.; 500 drums, 74 per cent., Caustic Soda at 2.35c.; 100 tons Sal Soda at 1c.; 300 bbls. Natrona Porous Alum at 2½c.; 200 bbls. Pearl Alum at 2¾c.; 200 bbls. Ground Alum at 1.95c.; 200 bbls. Lump Alum at 1.85c.; 25 cs. German Ultramarine at 17c.; 400 bbls. Keystone Alum at 1⅜c.; 15 cks. Brown Sugar of Lead at 8c.; 400 tons, 58 per cent., Alkali at 1.15c.

CHINA CLAY.—There have been arrivals of supplies and now there is a good stock of all brands on hand. The bulk of the business has been in the shipping of parcels sold to arrive. No change in the quotation is noted, they continuing at $13.30 for low grades, $16 for mediums and $18 for the higher qualities.

COAL.—The continued demand for Anthracite coal at this time is the source of considerable comment and surprise among the trade. There are those who consider the situation now even better than it was, say, two weeks ago. While the present trade is not characterized by a feverish anxiety to place orders, it is still brisk enough to warrant the maintaining of current prices and there is no immediate prospect of cutting. At New York the orders are being pretty well caught up with, except on Stove, which is harder to get than any of the other sizes at present. The market is in fair condition, for there is a heavy tonnage still due, but at the rate the tonnage has been forwarded in the past four weeks jobbers will soon be able to invite bids for coal. Some of the carriers to tide have had delays incident to the storms of the past week. The Eastern trade is not buoyant, but there is still a fair market, with little doing in the way of new business. The tonnage due from the wholesalers and producers is large, and the retailers are anxious to get this coal forward. The supply at the Eastward is not great, but plenty was bought long ago; it is now wanted. Chicago advices are that in the aggregate business is very good, and while there is not the active demand that obtained earlier in the month, trade is expected to move right along to the satisfaction of most shippers. At many cities in the West the stocks are adequate for the requirements for a month or two to come, but there are many small places that will require considerable tonnage to help out. It is said further that the present prices are assured for October, for there is nothing to warrant an advance. The shipments by water from Buffalo during the past week show an excess over the preceding week, and this is taken as an evidence that there is still something needed to help out the Western trade, but we hardly look for as great a tonnage in September as in July. The market, as a whole, can therefore be said to be much easier than it was, and a lessened tonnage during October would appear to be in order. In Bituminous coal there is more activity when one views the trade in its entirety; the output is large, but at the same time this is the season of the year when the tonnage must be forwarded to many points where it may not be actually consumed for some months to come. There is a very fair condition of trade both at New York and at the cities and towns along the Atlantic seaboard and in interior New England. The transient trade is not especially active or large, but the deliveries on season contracts are very liberal indeed, and the year will be one of the best on the records.

EDWIN BUTTERWORTH & CO.,
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COMMERCIAL AND CORPORATION LAW.
Special arrangements can be made by Manufacturers and Jobbers to be notified of failures, and to have their interests at Chicago protected.
References—J. W. Butler Paper Co., W. H. Parsons & Co., S. A. Maxwell & Co.

CRATTY BROS. & ASHCRAFT, Lawyers,
189 Dearborn Street, CHICAGO.
COMMERCIAL AND CORPORATION LAW.
COLLECTIONS A SPECIALTY.
REFERENCES.—Western Wrapping Paper Mfg. Ass'n, Chicago: Chicago National Bank; Western News Co.; Rand, McNally & Co. New York: George Mather's Sons. Boston: Carter, Rice & Co.

PRICES CURRENT.

NEW YORK MARKET.

Paper Market.

DEALERS SELLING PRICES.

Ledger and Record	$0.18	@	$0.24
Flat Caps, superfines	14	@	18
Flat Caps, fines	13	@	15
Flat Caps, engine-sized	9	@	11
Blotting, American	8½	@	17
Blotting, English	10	@	—
Book, super-sized and calendered	7	@	8½
Book, super-sized and tinted	7	@	8
Book, extra machine finish	7	@	7½
Book, machine finish, low grade	6½	@	7
Book, No. 1, shavings & imperfections	6½	@	7
News No. 1	5	@	5½
News, rag and wood	4½	@	5
News, straw	5¼	@	5½
Poster	9	@	10
Hanging, superfine, No. 1	7	@	8
Hanging, superfine, No. 2	7	@	7½
Hanging, machine satin	6	@	6½
Hanging, white blank, No. 1	5½	@	6
Hanging, curtain	5	@	5½
Hanging, buff	4	@	—
Hanging, brown	3½	@	3½
Colored papers, double mediums	7½	@	8½
Colored papers, glazed medium	8½	@	10
Colored papers, tobacco	8½	@	9½
Colored papers, tissues, 20 × 30, ℔ ream	1.10	@	1.35
Tissues, black, 20 × 30, ℔ ream	1.40	@	1.50
White tissue, 20 × 30, ℔ ream	.85	@	1.00
White tissue, 24 × 36, ℔ ream	1.30	@	1.50
Manillas, Flour-sack, cream	10½	@	12
Manillas, Flour-sack, drab	9½	@	11
Manillas, Rope, unbleached No. 1	9½	@	11
Manillas, Rope, unbleached No. 2	7½	@	9½
Manillas, No. 1, light weight	7	@	8
Manillas, No. 1, heavy weight	6½	@	7
Manillas, No. 2	5	@	6
Manillas, Rogue	2½	@	3
Wrapping Parchment	16	@	20
Tissue Manillas, full count, weight and size, 24 × 36, other sizes in proportion	75	@	80
Hardware, light colored, No. 1	9	@	10
Hardware, No. 1, glazed, tarred	7	@	8
Hardware, No. 1, glazed	5	@	6
Binders' Boards, ℔ ton, No. 1	70.00	@	90.00
Binders' Boards, ℔ ton, No. 2	40.00	@	50.00
Straw Boards, air-dried, No. 1, ℔ ton	45.00	@	—
Straw Boards, steam-dried, No. 1, ℔ ton	47.50	@	—
Straw Boards, steam-dried, No. 2, ℔ ton	45.00	@	—
Straw Boards, steam-dried, No. 3, State, ℔ ton	42.50	@	—
Straw Boards, air-dried, Penn, ℔ ton	35.00	@	—
Straw Boards, air-dried, State, ℔ ton	37.50	@	40.00
Straw Wrapping, basis, 15 × 20, 15½ lbs. 20 sheets—			
36 × 40, from 38 to 42 lbs. ℔ rm.	1.10	@	1.15
30 × 40, from 30 to 34 lbs. ℔ rm.	80	@	92
24 × 36, from 24 to 26 lbs. ℔ rm.	70	@	75
22 × 32, from 24 to 26 lbs. ℔ rm.	70	@	72
20 × 30, 21 lbs., ℔ rm	48	@	56
20 × 30, from 14 to 17 lbs. ℔ rm.	40	@	46
16 × 22, from 12 to 13 lbs. ℔ rm.	33	@	36
18 × 28	38	@	42
15 × 20, 10 lbs. ℔ rm	24	@	28
15 × 20, from 7 to 8½ lbs. ℔ rm.	20	@	23
14 × 18	19	@	20
12 × 16	17	@	18
11 × 15	14	@	16
Straw Wrapping, ℔ lb., heavy weight	1¾	@	2
Straw Wrapping, ℔ lb., light weight	2¼	@	2¾
Cigarette Straw Tissue, per case of 100 boxes, 50 books to the box, 200 sheets to the book	30.00	@	35.00
Tea Papers, 16-sheet quires—			
12 × 18	21	@	23
14 × 20	28	@	30
Card Middles, ground wood	5¾	@	6¾
Card Middles, long fibre wood	8¾	@	9¾
Card Middles, rag and wood	6	@	9
Wood Fibre, bleached	3¾	@	—
Wood Fibre, unbleached	3¾	@	—

Chemicals, Coloring Materials, &c.

Alkali, 58 ℔ cent	—	@	1.15
Alum, lump	1.85	@	—
Alum, ground	1.95	@	—
Alum, Keystone	1⅜	@	—
Alum, Diamond	—	@	2¾
Alum, pearl	2¾	@	—
Alum, porous	2¾	@	2¾
Aluminous Cake	—	@	1¾
Anti-Chlorine	—	@	2¾
Bichromate Potash, American	—	@	10¾
Bleaching Powders, spot and to arrive	—	@	2.10
Caustic Soda, 70 ℔ cent	2.35	@	—
Clay, China, English, ℔ ton	12.50	@	16.50
Clay, China, "Star"	12.50	@	—
Clay, South Carolina, ℔ ton	12.00	@	13.00
Clay, Terra Alba, French, ℔ ton	70	@	95
Clay, Terra Alba, American, No. 1	75	@	80
Corn Starch	—	@	3
Copperas, American	—	@	80
Extract Logwood	8½	@	—
Mineral Fibrous Pulp	25.00	@	—
Orange Mineral	—	@	8¾
Potato Starch	—	@	3¾
Prussian Blue, dry	28	@	45
Prussiate Potash, American	—	@	18¾
Rosins, common to good strained, ℔ bbl.	1.25	@	1.30
Rosins, E, ℔ bbl.	1.40	@	1.42½
Rosins, F, ℔ bbl.	1.45	@	1.47½
Rosins, G, ℔ bbl.	1.50	@	1.52½
Rosins, H, ℔ bbl.	1.55	@	1.57½
Rosins, I, ℔ bbl.	1.65	@	1.67½
Rosins, K, ℔ bbl.	1.75	@	1.80
Rosins, M, ℔ bbl.	—	@	1.90
Rosins, N, ℔ bbl.	—	@	2.20
Rosins, W G, ℔ bbl.	—	@	2.85
Sal Soda, English	—	@	1
Soda Ash, caustic, 48 ℔ cent	—	@	1.30
Soluble Blue	50	@	55
Spanish Brown	4½	@	1
Sugar Lead, white	13	@	13¾
Sugar Lead, brown	—	@	8
Sulphate of Alumina	—	@	2¼
Sulphuric Acid, 66 ℔ cent	1¾	@	2¾
Ultramarine, blue	12½	@	17
Venetian Red	—	@	1.35
Vitriol, blue	4¾	@	5
Yellow Ochre, Rochelle	—	@	2.25

BOSTON MARKET.

Paper Stock.

Mill Assorted Whites	4¾	@	
Cotton Canvas	4½	@	4¾
Cotton Canvas, No. 2	2¾	@	—
Gunny Bagging	1¾	@	2
Gunny Bagging, No. 2	—	@	—
Shivey Bagging	1¾	@	—
Waste Woolens	¾	@	1
Jute Butts	1 15-16	@	2
White Collar Cuttings	2¾	@	3
White Envelope Cuttings	3¼	@	3½
Hard White Shavings, No. 1	3	@	3½
Soft White Shavings, No. 1	2¾	@	2¾
White Shirt Cuttings	3½	@	—
Country White Rags	4¾	@	4¾
Country Mixed Rags	1¾	@	2
City Whites, No. 2	3¾	@	3¾
Seconds, Country	3	@	3¼

Chemicals.

Alkali, 58 ℔ cent	1.15 @	1.20
Alkali, 36 ℔ cent	1.30 @	1.50
Aluminous Cake, currency	1¼ @	1½
Alum, American ground	2 @	2½
Alum, American lump	1½ @	2
Anti-Chlorine	3 @	3¼
Bi-Chromate Potash, American	10½ @	—
Bleaching Powders	1.85 @	1.87
Blackley Blue	2.00 @	3.00
Caustic Soda, 70 ℔ cent. (for 60 ℔ cent.)	— @	2.95
Clay, English, ℔ ton	14.00 @	18.00½
Clay, American, ℔ ton	13.00 @	14.00
Copperas, ℔ lb	⅞@	1
Extract Logwood	5½@	6½
Lime, Rockland, ℔ bbl	95 @	1.00
Prussian Blue, ℔ lb	50 @	60
Prussiate Potash, American, yellow	— @	18¼
Prussiate Potash, red	51 @	52
Rosin, common strained, ℔ bbl	1.45 @	1.50
Rosin, No. 2	1.50 @	1.60
Rosin, No. 1	1.65 @	1.80
Rosin, pale	2.30 @	3.00
Rosin, extra pale	3.30 @	3.70
Sal Soda, English, ℔ lb	0½@	1
Soda Ash, 48 ℔ cent. caustic	1½@	1.30
Soda Ash, 48 ℔ cent. carbonated	1¼@	1.40
Soluble Blue	55 @	65
Sugar Lead, white	12½@	13½
Sugar Lead, brown	7½@	8
Sulphuric Acid, 66°	1½@	1½
Terra Alba, ℔ ton	15.00 @	20.00
Ultramarine, ℔ lb	12½@	16
Venetian Red, ℔ lb	1½@	1¹
Vitriol, Blue	5½@	5½
Yellow Ochre	1½@	2

Advertisements.

Twenty-five cents per line of eight words each insertion. No charge less than one dollar.

WANTED—FIVE PAPER DRYERS, 44×36 INches. Address
HAVERHILL PAPER CO.,
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WANTED—SITUATION AS ENGINEER; used to beating all kinds stock; sober man, willing to work. Address ENGINEER, care of Paper Trade Journal.

SITUATION WANTED—A PUSHING YOUNG man, superintendent of a two-machine fine writing mill, with large experience in making colors and all grades of fine papers, wishes engagement with a fine writing or first-class book mill.
Address
LOCK BOX 308,
Holyoke, Mass.

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WANTED—BY MARRIED MAN, SITUATION to run machine; strictly sober and industrious; on hand every day to work. Address C. W., care of PAPER TRADE JOURNAL.

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WANTED—AN EXPERIENCED FOREMAN desires a situation; thoroughly competent on manilla, tissue or news; understands the management of help and the keeping of things in thorough repair. Best of reference. Address C., 128 Jackson St., Lawrence, Mass.

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FOR SALE—FOUR 28-INCH 5-ROLL SHEET Calenders; one 24-inch 5-Roll Sheet Calender. For particulars inquire
PARSONS PAPER COMPANY, Holyoke, Mass.

FOR SALE—One Rotary Boiler, 6×16, half inch iron.
Two Upright Digesters, 6×16.
THREE RIVERS PAPER CO.

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TWO 48 INCH LEFFEL WATER WHEELS,

About as good as new. Will be sold cheap.

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With or without mill property. Machinery all in first-class running order and must be sold immediately. Satisfactory terms will be made to party purchasing the entire plant. Full details furnished on application.
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A valuable mill site, consisting of dam, steel steam boiler and water wheels, and about three acres of land. Will be sold on reasonable terms. Also a quantity of Paper Mill machinery, damaged by fire. Address,
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Within 50 miles of either Philadelphia or Baltimore. Water and steam power; beautiful wash water; two steam engines; 66 inch Foudrinier machine; ten dryers; rotary boiler; Jordan engine, etc.; now running. Address
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50 Horse Power Steam Engine, Wheel 12 feet; diameter, 16 inch face.
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Freight, 3½ cents per 100 pounds.
Valuable water power right belongs to property, at nominal rent.
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One 84 inch Fourdrinier Machine,
One 62 " " "
Four double tenement houses on the property.
Will be sold on easy terms. Apply to
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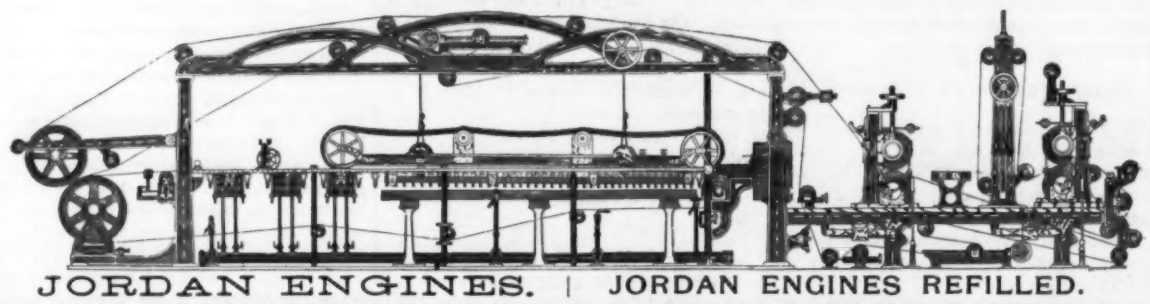

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FOR PARTICULARS, ADDRESS
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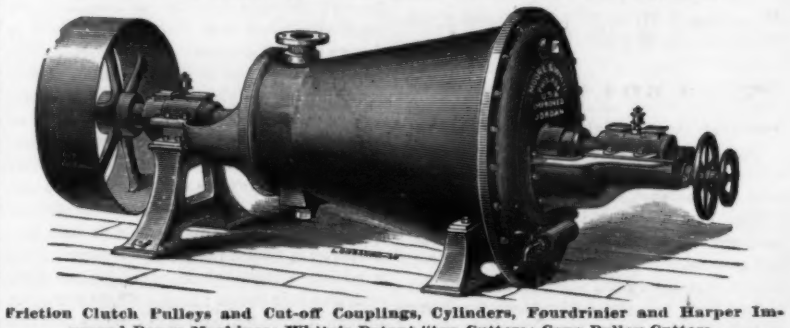

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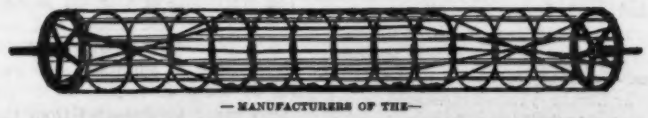

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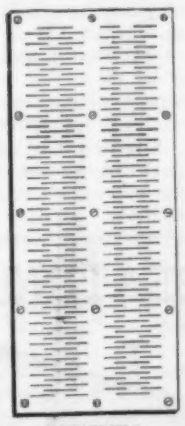

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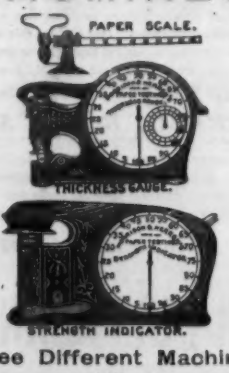

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In use in a large number of best Paper and Pulp Mills in this and other Countries.

Possesses more than Double the Capacity of other Water Wheels of same diameter, and has produced the Best Results on Record, as shown in the following tests at Holyoke Testing Flume:

Size Wheel.	Head in Feet.	Horse-Power.	Per Cent. of Useful Effect.
15-inch.	18.06	40.17	.8932
17½-inch.	17.96	56.35	.8960
20-inch.	18.21	49.00	.8532
25-inch.	17.90	68.62	.8084
30-inch.	11.65	52.54	.8076

With proportionately High Efficiency at Part-Gate.

Such results, together with its nicely-working gate, and simple, strong and durable construction, should favorably commend it to the attention of ALL discriminating purchasers. These Wheels are of very Superior Workmanship and Finish.

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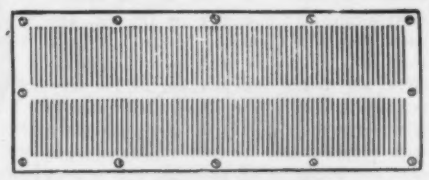

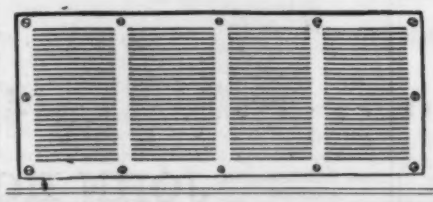

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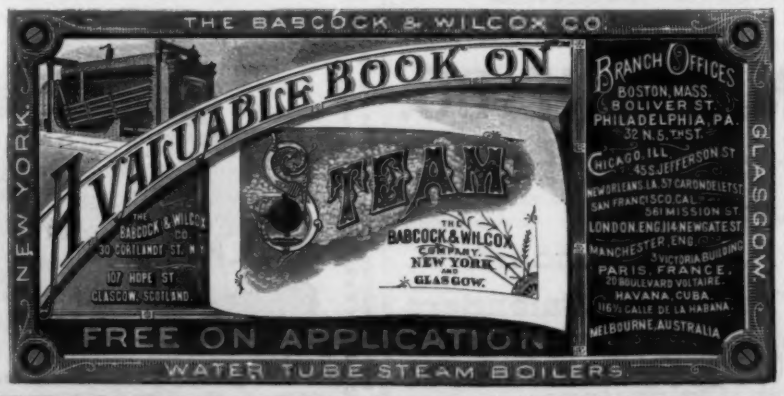
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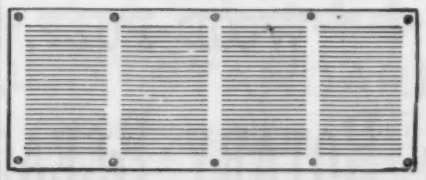

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All the **Wood Pulp Manufacturers** who have used these stones say they give general satisfaction, and are much superior to any **imported** stone. We manufacture stones for the following machines: The Warren-Curtiss, Voelter, Brokaw, Frambach, Valley Iron Works, Stout, Mills & Temple, Hughes & Horton, Frank Dilks and New England, Scott & Roberts, and all others. In sending orders please be particular to give the exact dimension the stone must be. Give the diameter and face of stone, the diameter and depth of flange, where flanges are to be cut. State size of hole for shaft, and if round or square.

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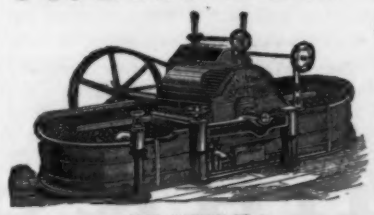

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An improvement in Washing Engines.

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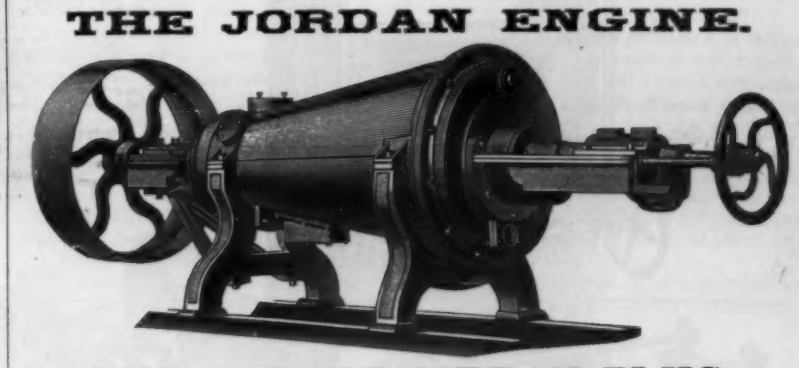

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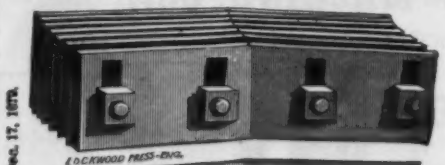
Patented May 25, 1869, and Jan. 5, 1875.

This Plug is an Improvement over all kinds in the country. It can be Refilled with New Bars at the mill where it is used, when worn out, by an ordinary mechanic, in a short time, and thereby save freight and expense of sending it away to be refilled. All of our Jordans contain this style Plug.

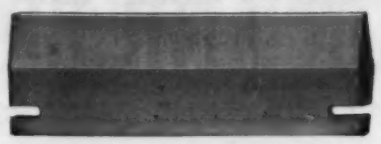


Patented Dec. 17, 1878.

LOCKWOOD PRESS-ENG.

THE "HORNE" PLATE.

Pat. Feb. 14, 1882



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Roll Bars, Bed Plates, Rag Knives.

JORDAN ENGINES REFILLED.

Jordan Bar and Filling Constantly on Hand.

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STRONGEST!

CHEAPEST!

BEST!

TRADE MARK. TRADE MARK.

INDESTRUCTENE *BELTING.*

SOLE MANUFACTURERS,

COMBINATION ROLL AND RUBBER CO., Bloomfield, N. J.

Manufacturing News.

EASTERN STATES.

Work on the new paper and pulp mill at Milton, N. H., is said to be progressing rapidly. The building is to be 132x52 feet and three stories high. The present dam is to be raised 6 feet, which will give a head of 22 feet. The motor power is to consist of three wheels giving 400 horse power.

The Seymour Paper Company, Windsor Locks, Conn., is said to have purchased the White Paper Mill in Boston Neck, and to be about to repair it and manufacture wrapping paper for its mill at Windsor Locks.

N. M. Small, Baldwinsville, Mass., is erecting a manufactory for the manufacture of asbestos paper.

The new pulp mill at Jay, Me., is fast approaching completion.

MIDDLE STATES.

S. Morgan Smith, York, Pa., shipped last week to the Empire Wood Pulp Company, Black River, N. Y., six 36 inch improved "Success" water wheels, arranged to work on horizontal shafts. This company has now in course of construction a pulp mill, which it expects to start up next month.

C. & H. Russell, Penn Yan, N. Y., have ordered another D. T. Mills grinder, which, with the one they now have in operation, will give them a capacity of about 6 tons of dry pulp per day.

WESTERN STATES.

The Flambeau Water Power Company is building a pulp mill at Flambeau, Wis., on the Flambeau River, to make 8 tons of dry pulp daily. It will use two 66 inch and one 36 inch "New American" turbines. C. E. Pride, who has been for a long time superintendent for the Union Pulp Company, at Kaukauna, Wis., is the general manager, and says that he will have one of the best mills in the Northwest. Mr. Pride is not only a good pulp maker, but a first-class millwright and engineer and knows how to build what he wants.

The Elmwood Paper Mill, Elmwood, Ind., has been started up after a two season of repairs and renovation. New beating engines, steam pumps, water purifiers, &c., have been put in.

The Lawrence Paper Company, Lawrence, Kan., has put in a 150 horse power engine to drive the beating engines and a 45 horse power engine to drive the machine.

SOUTHERN STATES.

The Harper's Ferry Paper Company, Harper's Ferry, W. Va., is building a pulp mill, and has placed an order with Stout, Mills & Temple, Dayton, Ohio, for eight 36 inch special "New American" turbines to be placed on horizontal shafts. This is to be a first-class mill, and will turn out about 30 tons of dry pulp per day.

Small Hygrometer.

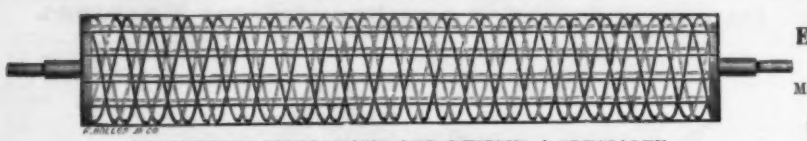
By Dr. Würster.

The strength of a paper is more or less dependent on its contents in humidity. In fog especially, which comes into immediate contact with the paper, the tearing length decreases in a remarkable degree. Analysis as to strength should therefore be always made in rooms possessing about the dryness in the atmosphere. The quantity of water in the form of invisible vapor which the air can take up varies greatly and increases rapidly with a rising temperature. A great many solid bodies take up water from the air or give out water to dry air, at the same time changing their form or longitudinal mass. Saussure first made use of hair in ascertaining the humidity in the air, and since then fibres, animal membranes, gelatine, &c., have also been used. Hygrometers are rather independent of the temperature and only give the relative quantity of water in the air. If the air is saturated with humidity so as to show visibly as fog or dew, the degree of 100 per cent. will be seen on the hygrometer. The air in rooms of from 40 to 60 per cent. relative humidity may be regarded as normal.

A small hygrometer, which can be used in paper testing, has been lately constructed. Two metal plates, perforated so as to permit of the free entrance of air, are united, a space of 5 centimetres being left between each. In this space is a lock of blond female hair, from which the fat has been extracted. This hair is held by two clamps, and runs over a small cylinder. The clamps turn on pins in such a way that all of the movements of the hair are followed and indicated. A hand gives the relative humidity of the air, independent of the temperature, in percentages, and the difference of this number to 100 is the "saturation deficit" of fluegge—that is, the quantity of water vapor which the air can absorb until a cloud is formed.—*Papier Zeitung.*

A receiver has been appointed for the stock of books and stationery belonging to the estate of C. P. Schneider, Santa Ana, Cal.

C. H. SMITH & CO., HOLYOKE, MASS.,



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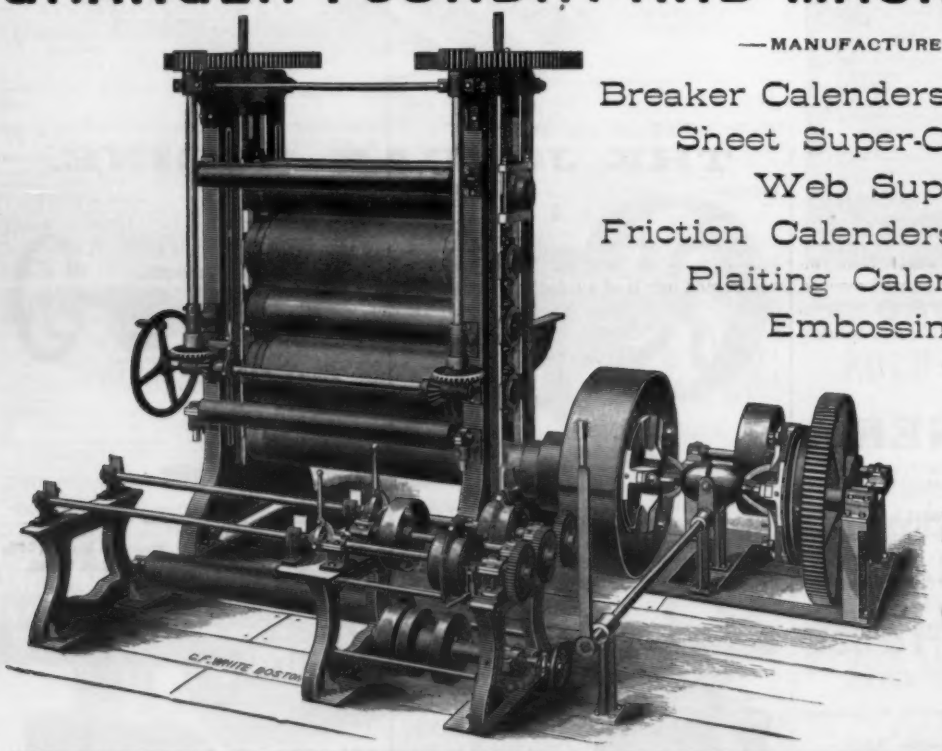

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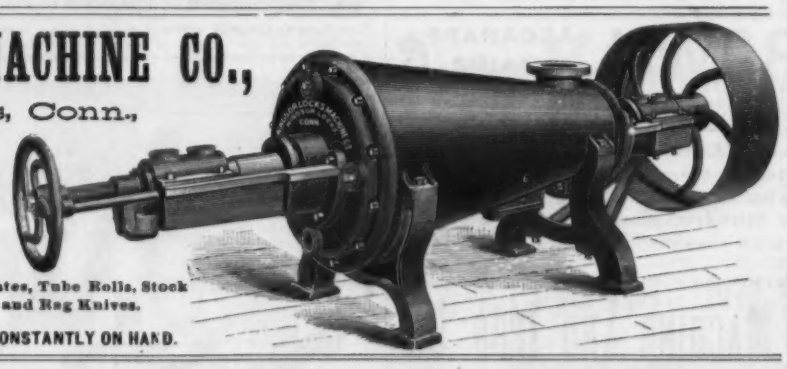
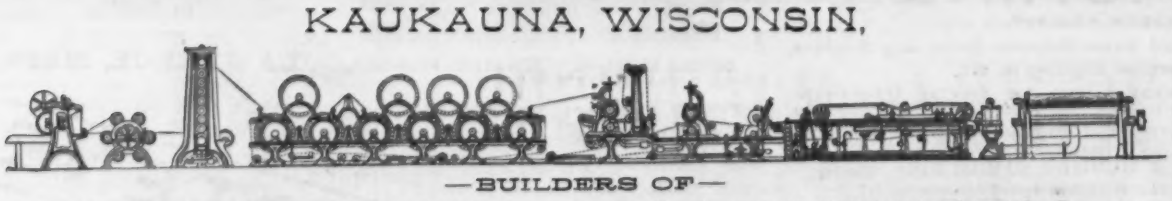


ATLAS IRON AND BRASS WORKS,

KAUKAUNA, WISCONSIN,



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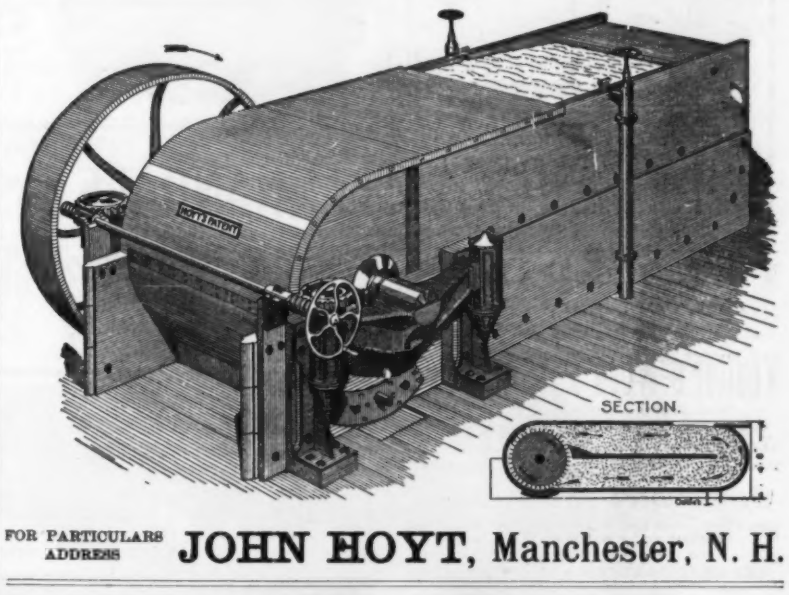

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ROTARY · BLEACHING · BOILERS.

THOSE WHO HAVE UNSAFE ROTARY BOILERS IN USE CAN EXCHANGE THEM FOR THE Loring Patent Rotary, and can be furnished with abundant evidence that the Loring Boiler is absolutely safe, and the only safe Rotary Bleaching Boiler in use. For the production of chemically prepared wood-pulp it has been found extremely difficult to make a boiler that would remain absolutely tight for any considerable length of time. I have accomplished this result by adopting modes of construction far in advance of the best methods for producing first-class boiler work, in combination with substances and methods entirely independent of boiler work, and only known to myself. I invite special inquiries in regard to my patent WOOD-PULP BOILERS, patent STRAW-PULP BOILERS, and Rotary Bleaching Boilers; also to my patent process for extracting water from wood and straw pulp, and to my improved Fibre or Drainer Tanks, and Fibre Valves. The common steam-boilers built by the undersigned have proved more durable and safer than those of any other manufacturer in the United States. Steam-boilers, now in good condition, that have been in constant use twenty-eight years, can still be seen in use in Boston. Not one of the many thousand boilers, varying in weight from one half to forty tons, has ever exploded or given out, to cause injury to a single person or to one dollar's worth of property, during the twenty-eight years.

HARRISON LORING, Boston, Mass.

NOTICE.—I have been informed that irresponsible boiler-makers have offered to build Rotary Boilers with whole wrought-iron heads and a hollow journal, which would be an infringement of my patent. Such boilers will be made by the undersigned at low prices—having special tools for the work—and no extra charge made for the patent-right, which would have to be paid by the user if made by an unauthorized person.

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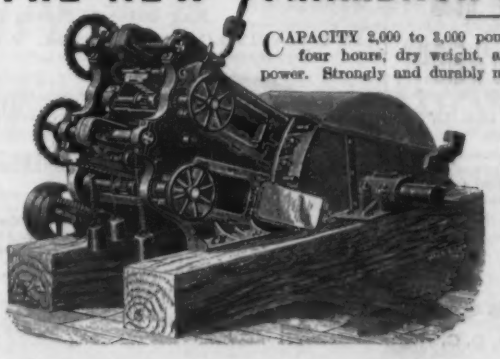
THE NEW FRAMBACH PULP GRINDER



CAPACITY 2,000 to 3,000 pounds finest quality pulp per twenty-four hours, dry weight, at from eighty to one hundred horse power. Strongly and durably made. Weighs 5,000 pounds without stone. Will give more pulp of any given fineness to the horse power, with smaller repairs, than any other grinder in the market. Between one and two hundred in successful use.

For Price and full details address

APPLETON MACHINE CO.,

Appleton, Wis.,

Manufacturers of Pulp Grinders, Wood Barkers and Splitters, Stone Dressers, &c.

(*Continued from first page.*)

get out one of the step blocks at once. It is a good plan to keep the step blocks in a place where the water will be drawn off when a new step is put in. Then a new block can be secured at the time of putting in the new step.

Put the step block in a speed lathe and turn up to the exact size required by both water wheel and spider. I always make a point of getting out a sheet zinc templet of the step. The templet can be fitted to both the wheel shaft and spider, and the calipers may be set direct from the zinc templet when turning the step. It does not pay to have to wait until the old step is out before the size can be had to make a new step by. I want my step at hand to put in the minute the old one is out.

Turn up the step, as before stated, and finish it to exact size. Provide a large kettle which will hold the step. Melt enough tallow to completely cover the step, and keep it warm for several hours. The best way to do the heating is to run a little steam pipe under the kettle.

After simmering three hours, or a day or two if convenient, bring the tallow to a boil for a few minutes, then set it to one side until the step is wanted. Let the finished step remain in the tallow, which will harden around the wood and prevent all shrinkage thereof, for any length of time.

When a step goes out heat up the kettle. Take out the new step and clap it under the wheel; start up and go ahead. If the wheel runs true and keying on the wheel did not make a crank of the shaft the tallow filled step will wear a long time and never wear down stream without ample cause.

When making steps in the water wheel maker's shop it is not always convenient to have a lot of two year old maple in the raceway. I find that it doesn't very often become convenient for the paper mill man, either, so I have to use green stock. In this case I block out the steps, never leaving less than 1 inch spare wood on 10 inch steps and one-half inch on small steps. After blocking I put the steps in a box and steam from ten to twenty-four hours. After steaming they are turned to a finish and put into the tallow kettle.

Sometimes I have put the steps in the exhaust of a steam engine. The exhaust steam will take out the sap as well as live steam, but it takes a little longer to do the work. I said, "Never keep the steps in the boiler room," but you may do it if kept in the tallow. Sam Jenkins used to keep the tallow kettle on top of a boiler, but one day the tallow got on fire from a petticoat lamp and a hole was burned through the roof before the blazing oil was extinguished. Jenkins doesn't do so now.

I have noticed several indorsements of lignum vitæ for water wheel steps. I had just as soon have pitch pine. Lignum vitæ belongs to the gum secreting trees, and it will burn like a piece of rosin. Although a very hard wood and wearing well as a step as long as it runs cool, burning will take place very quick when once the step gets hot and cutting or charring commences.

INSURANCE INSPECTION.

Considerable has been said lately in THE JOURNAL about inspectors and their ways. It is time the inspectors were inspected, and, like all other fire apparatus, they need continual inspection to keep them in good shape.

What good does it do a millowner or an underwriter for a tall hat with an inspector in it to pass through a paper mill? Like Pat's excuse for getting drunk, it "azed his moind," and it eases the mind of the inspector, for *he* gets a salary.

A great many paper mills take fire from a duster, but the greater number of fires originate in the wheel room or pit. Queer place for a fire to start, but the truth nevertheless; but who ever saw an inspector hunting in the wheel pit for "rats and matches," or other elements of "spontaneous combustion?"

Let's see how a fire could start in the wheel pit or wheel room, and thus learn what to guard against. A pulley or a gear gets loose and moves along the shaft until the rim of the pulley rubs against the foot of the hanger, or even against a bolt. Here is cast iron rubbing against cast or wrought iron, and either will send off a stream of sparks, when two wrought iron surfaces in rubbing contact would not show a sign of fire. Pretty soon a particle of the iron, torn off in that red hot incandescent state, strikes against a particle of fuzz from a belt or dust from upstairs; the dust ignites and usually goes out, but once in a while it ignites a few more particles, a stream of fire eats its way through the mill and the adjuster has his inning.

Sometimes, and often, a bearing gets dry, hot and on fire. If it is when the mill is running extra well, and one man may be snoozing in a cupboard, while another takes a siesta in back of the new drainer, there is another chance for THE JOURNAL to record a fire and tell how much the inspector didn't see when he walked through the mill in kid gloves.

Sometimes negligence regarding fire apparatus goes unnoticed for years. It never will be wanted until the next fire, so it hangs in dust and peace until the time comes; then it fails.

"Millwright" would like to "inspect" some mills. He would love to make owners overhaul mouldy hose and shrunken fire buckets. He would search out the piles of combustible rags, paper and excelsior which the men are so fond of building "nests" of in out of the way corners, where many an hour can be "put in" with comfort and a smoke. He would have the rusty automatic (?) sprinklers taken out of the bleach room and all of the crate stock removed from over the boiler and out of the boiler house.

Hose would not hang attached to every stand pipe hydrant and be found rotted completely off in case it was needed. The fire pump friction pulley would not have a chance to stand almost in mesh, so that end wear of the main shaft would wear a big, flat place in the grooved pulley. Such a thing always did spoil the working of a fire pump, and let the mill burn up for the lack of water when the fire was first discovered.

There are "forty eleven" other things millwright would look out for, and one of them would be the tin lamps filled with kerosene oil, which the hands love to set on top of the steam heating circulation, and then "cuss the luck," because the lamp always smokes; just because boiling hot oil is being burned.

Perhaps "Millwright" would prevent a few fires by his inspection, but he certainly would do away with a hundred or more risky things around a paper mill, which inspection by the present method does not see, or, seeing, does "not know t'was loaded."

Construction of Dams.

BY C. R. TOMPKINS.

The construction of dams in localities where the stream is small and variable is an important feature. If by a suitable dam all the water which accumulates during the night can be stored for use during the following day the capacity of the mill is thereby nearly or quite doubled.

Defective and leaky dams are a constant source of annoyance and expense. It is not only the loss of power in dry times by the constant waste of water, but such dams are liable at any time to be carried away by the first freshet that may occur. Thousands of dollars are lost every year in this manner It is not only the expense of building a new dam with which the mill owner has to contend, but the loss of the earnings of the mill for a month or two while a new dam is being built is also quite an important item in the bill. In nine cases out of every ten the fault may be traced to a defective foundation.

There are but few localities where a dam cannot be built strong enough to withstand any freshet that may occur. Where the bottom is rock the mud sills, which form the most important part, should be well secured with bolts driven into it. Where it is earth or sand it may be necessary to resort to other means in order to secure it. The height and length of the dam, the nature of the bed of the stream, with the probable pressure that may be brought to bear upon it, should all be carefully taken into consideration before the work is commenced.

Suppose a dam 50 feet long and 12 feet high, to be built of timber, is required, and the bed of the stream is rock. The first step should be to calculate the greatest amount of pressure which it may be required to sustain. The pressure upon an inclined surface is equal to the product of half the perpendicular height and the length multiplied by 62½. By this means the whole pressure upon the dam in pounds may be obtained when it is just full. But in times of high water the depth of the sheet which may be liable to flow over it must be taken into consideration, for the pressure will be increased as the depth, and in this case 2 feet at least should be allowed. Now, one-half of 12 feet is 6, and 2 feet allowed for high water is 8, then $50 \times 8 = 400 \times 62\frac{1}{2} = 25{,}000$ pounds.

Excavations should be made in the banks on each side of the stream, to admit of suitable abutments being built, which should be of stone laid up with water lime, and carried far enough above the proposed height of the dam to prevent the water at any time flowing over them. The bed of the stream, where the foundation will rest, should be leveled off as nearly as possible, so as to give a good bearing for the mud sills. These, to resist the action of the elements and withstand the pressure of a dam of this height, should be of oak, 12 inches square, if that kind of timber can be conveniently obtained, and laid the whole length across the stream, from one abutment to the other, and secured to the rock by rock bolts 1½ inches in diameter and about 30 inches long, and not over 6 feet apart.

A rock bolt is a piece of round iron, with a head upset upon one end and the other split about 2 inches or more from the end. Into this split the end of a thin, tapered iron wedge is inserted just far enough to hold it while it is being put down into the rock through the timber. The hole which is drilled to receive it should be just deep enough to correspond with the length of the bolt and allow the end of the wedge to rest upon the bottom of the hole before it is driven. With the end of the wedge resting upon the rock at the bottom of the hole, if the bolt is driven down with a sledge, the wedge is forced into the end of the bolt where it is split, and spreads it apart so as to force it against the sides of the hole.

Bolts well fitted and driven down in this manner will never give way, no matter what the strain may be upon them.

Mortises should then be made in the sill between each bolt, and uprights of the same size framed into it of a length corresponding with the height of the dam, allowing, of course, for the thickness of the stringer, which should also be framed upon the top of them and run the whole length of the dam, and should be the same size as the sills. This completes the first part of the structure.

Another mud sill corresponding in size with the first should now be put down 12 feet above it, and fastened to the rock in the same manner. Timbers or joists, 3x8 or 4x12 inches square, should now be laid about 2 feet apart, one end resting upon the upper mud sill, while the other rests upon the top of the former part of the structure, thus making an angle of 45° with the bed of the stream. Each end of the joist should be secured to its respective timbers by bolts, when the whole surface may be covered with planks well spiked to the joists. This completes the structure as far as the millwright is concerned.

The arrangement for the head gates and flume to be attached to it will vary according to circumstances and their location, &c., and will readily suggest itself to the practical millwright.

To avoid small leaks and to secure the planking from injury, it is well to cover them to a considerable depth, especially toward the bottom, with earth or gravel.

When the bed of the stream is hard earth or clay, posts should take the place of the rock bolts, and be sunk at least 6 feet below the bed of it, and the mud sills bolted to them, otherwise the structure may be the same. The bottom below the dam, however, for a considerable distance, should be either covered with planks or filled in with stones, to prevent the overflow washing out the earth which sustains the posts.

Where quicksand forms the bed of the stream, which, fortunately, is not often the case, it is almost impossible to build a permanent and reliable structure of this kind without first driving piling and then planking it over for the foundation. In such cases two rows of piles should be driven across the stream, 12 feet apart, for a dam 12 feet high, to secure the upper and lower mud sills, and as close together as may be convenient, but not in any case more than 3 or 4 feet apart. The mud sills should be securely bolted to each pile, and the whole space between them should be either well grouted with stone and water lime or covered with planks, which should extend at least 10 feet below the overflow.

The grouting, if put in to a proper thickness, is no doubt the best, but as it is quite expensive, planks, if well put down, will answer the purpose.

When the structure is completed, to secure the upper side and prevent the water working under the mud sill located there, the bottom for some distance above it should be puddled with clay before the earth and gravel filling is put on.

If sufficient care is manifested in all these details there is no locality where a good and permanent dam cannot be erected. But it is frequently neglect in some of the small details which leads to disaster.

It is well for the practical millwright to

LIST OF SALES OF

WESTINGHOUSE ENGINES,

COMPOUND, STANDARD AND JUNIOR, *For the Month of August, 1888.*

All'gy Co. Lt. Co. (16th order), Pittsburgh, Pa.	150	H. P.,	Cp.	Baldwin Locomotive Works (9th order), Phila., Pa.	65	H. P.	Cp.	Washington Gas Co., Washington, Ind.	35	H. P.	St.
" " " " (17th "), " " "	150	"	Cp.	Quaker City Dye Works, Philadelphia, Pa.	60	"	St.	Darl'gton Gin'g & M. Co. (2d ord.), Darlington. S. C.	25	"	Jr.
" " " " (18th "), " " "	150	"	Cp.	M. E. Lt. & P. Co. (4th order), Morristown, N. J.	60	"	St.	Ada Mfg. Co., Charlotte, N. C.	25	"	Jr.
O. & C. Ry. R. & B. Co., Council Bluffs, Ia.	150	"	Cp.	Norwich E. L. & P. Co., Norwich, N. Y.	60	"	St.	Passaic Print Works (2d order), Dundee, N. J.	25	"	Jr.
Va. E. Lt. & P. Co. (2d order), Richmond, Va.	150	"	Cp.	Pencoyd Iron Works (4th order), Philadelphia, Pa.	50	"	Cp.	G. H. Nichols & Co. (5th order), New York.	25	"	Jr.
" " " " (4th "), " " "	150	"	Cp.	Darlington Ginning & Mill Co. Darlington. S. C.	50	"	Jr.	McArthur Bros. (2d order), Danbury, Conn.	25	"	Jr.
Colorado Elec. Co. (9th "), Denver, Col.	150	"	St.	Tate & Sons, Brayner. Mo.	50	"	Jr.	Canton Steam Pump Co. (2d order), Canton, Ohio.	25	"	Jr.
" " " " (10th "), " " "	150	"	St.	Dealer, San Francisco, Cal.	50	"	Jr.	Burrell Chemical Co., Newberry, Mich.	25	"	Jr.
St. L. & San Franc. Ry. Co., Springfield, Mo.	125	"	Cp.	A. B. Bary (4th order), Moscow. Russia	45	"	St.	" " " (2d order), Newberry, Mich.	25	"	Jr.
Cheney Bros., S. Manchester, Conn.	125	"	St.	Forestdale Mfg. Co., Providence, R. I.	45	"	St.	Dealer, Dallas, Tex.	25	"	Jr.
" " (2d order), Manchester, Conn.	125	"	St.	Nova Scotia Steel Co., New Glasgow, N. S.	35	"	Jr.	Lawrence Machine Co. (35th order), Lawrence, Mass.	25	"	Jr.
Pittsburgh Refining Co., Pittsburgh, Pa.	125	"	St.	St. L. & San F. Ry. Co. (3d order), Springfield, Mo.	35	"	Jr.	Bryden Horseshoe Co. (2d order), Catasaqua, Pa.	25	"	Jr.
O. & C. B. Ry. & B. Co. (2d order), C. Bluffs, Ia.	100	"	Cp.	Foster Bros., Atlanta, Ga.	35	"	Jr.	Chambers, Turner & Layton, Truro, N. S.	25	"	St.
Westinghouse Elec. Co. (12th "), London, Eng.	100	"	Cp.	Waverly Stone Co. (2d order), Holland, Mich.	35	"	Jr.	R. Mackintosh, Lundy, Utah	25	"	St.
St. L. & S. F. Ry. Co. (2d order), Springfield, Mo.	100	"	Cp.	Dealer, Dallas, Tex.	35	"	Jr.	Oil Well Supply Co., Pittsburgh, Pa.	25	"	St.
Gd. Trunk Ry. Co. (6th "), Montreal, Can.	75	"	St.	J. W. Schadewald & Co., Minneapolis, Minn.	35	"	St.	Keating Imp. & Mch. Co., Beckville, Tex.	15	"	Jr.
" " " " (7th "), " " "	75	"	St.	Lincoln Iron Works (2d order), Rutland, Vt.	35	"	St.	Dealer, Dallas, Tex.	15	"	Jr.
Bryden Horse Shoe Co., Catasaqua, Pa.	75	"	St.	Anton Schollmeier, Pine Bluffs, Ark.	35	"	St.	Elberton Oil Mill (2d order), Elberton, Ga.	10	"	St.
Wyatt Park Ry. Co., St. Joseph, Mo.	75	"	St.	Cum. & Pres. Mills (5th), Cumberland Mills, Me.	35	"	St.	Betts Street Furniture Co., Cincinnati, Ohio	10	"	Jr.
" " " " (2d order), St. Joseph, Mo.	75	"	St.	The Crown Mills (2d order), Marcellus, N. Y.	35	"	Jr.	American Glucose Co., Peoria, Ill.	10	"	Jr.
American Glucose Co. (2d order), Peoria, Ill.	10	H. P.	Jr.								
" " " (3d "), " " "	10	"	Jr.								
H. McMoran, Port Huron, Mich.	10	"	Jr.								
Westinghouse Elec. Co. (13th order), Pittsburgh, Pa.	5	"	St.								
Chambers, Turner & Layton, Truro, N. S.	5	"	Jr.								
Dealer, San Francisco, Cal.	5	"	Jr.								
" "	5	"	Jr.								
S. Bethlehem Gas & W. Co., S. Bethlehem, Pa.	5	"	St.								
Pennsylvania R. R. (10th order), Camden, N. J.	5	"	St.								
Lawrence Mach. Shop (36th order), Lawrence, Mass.	5	"	St.								

SUMMARY.

12 Compound Engines, aggregating	1,440	H. P.
27 Standard " "	1,590	"
31 Junior " "	740	"
Total, 70 Engines, aggregating	3,770	H. P.

Note the Repeated Orders. Note the Character of Customers. Note the Distribution of Trade. Note the Volume of Business and Draw your own Conclusions.

THE WESTINGHOUSE MACHINE CO., PITTSBURGH, PA.

COLE'S PATENT DUSTER.

Duster shown with Doors Open and Cover Removed.

SANDY HILL IRON AND BRASS WORKS,

SANDY HILL, N. Y.

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Patent Friction Pulleys and Cut-Off Couplings.

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remind those who are about to put up structures of this kind that it is better for them to spend a few extra dollars in making everything perfectly secure than to be obliged in a short time to spend several hundred for a new dam, which is liable to be carried away by the first freshet which may occur.

A Novel Campaign Pin.

The paper manufacturers seem to be seriously involved in the present New York State campaign. Robert Albrecht, of Oneida, has brought out a pin or button in honor of Warner Miller which will be recognized as specially appropriate. It consists of a round, nickeled frame, enclosing a piece of wood pulp from Warner Miller's celebrated mills. On the wood pulp is the legend, "Miller for Governor."

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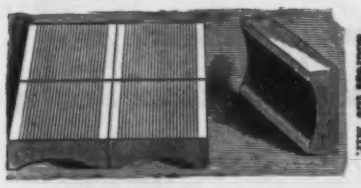

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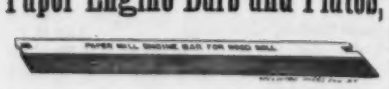

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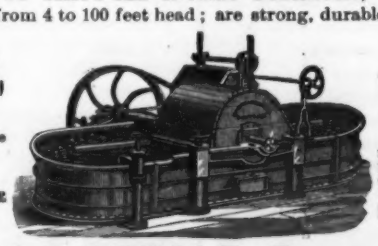

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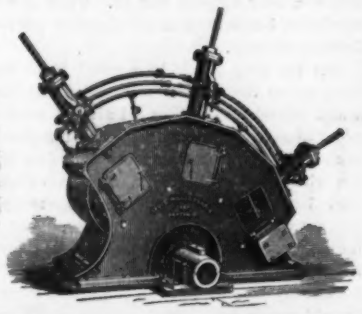

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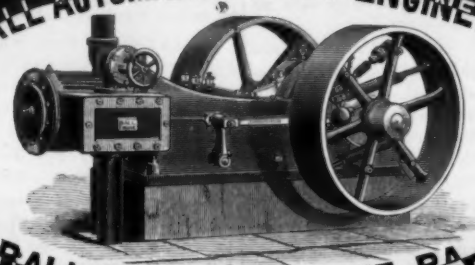

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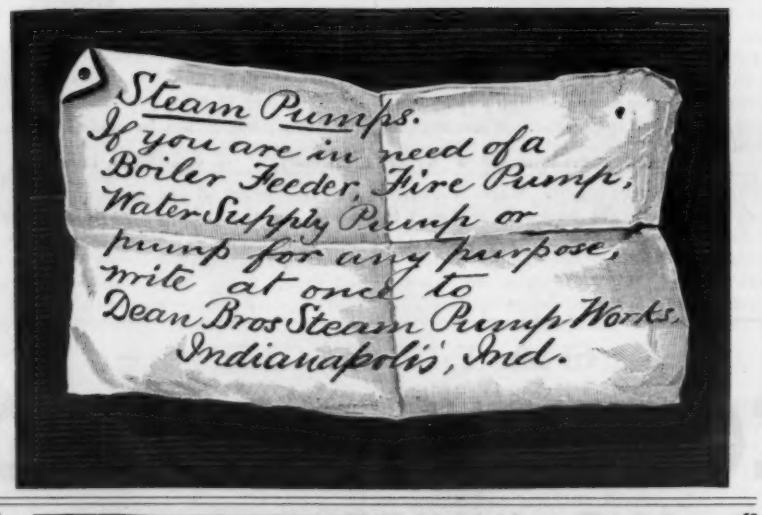
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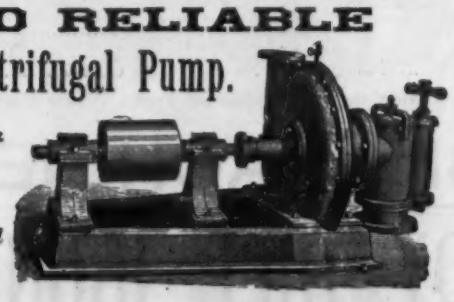

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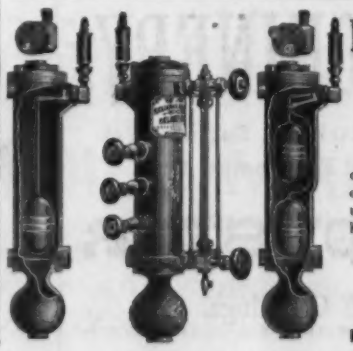

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They cost a little more than the common outfit, but are cheaper than boiler explosions or needless repairs to engine or boiler. Every column WARRANTED. Thousands in use. Send for Illustrated Price List. Sold and warranted by boiler makers and dealers everywhere.
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THE CHEAPEST AND BEST STEAM PUMP IN THE MARKET. PRICES LOWER THAN ANY OTHER.
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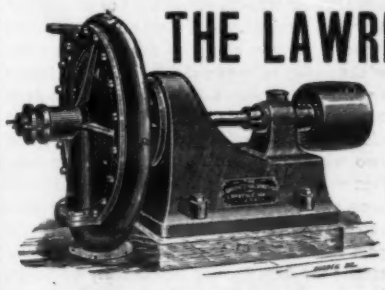

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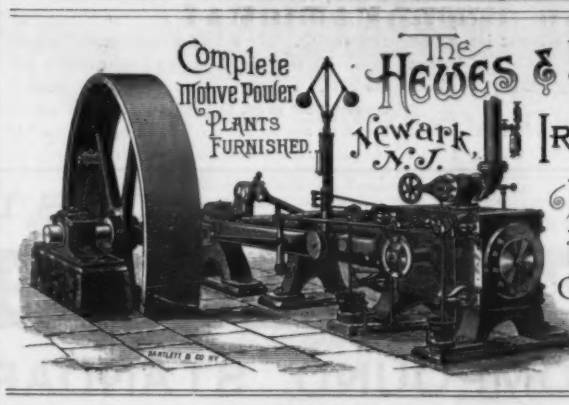

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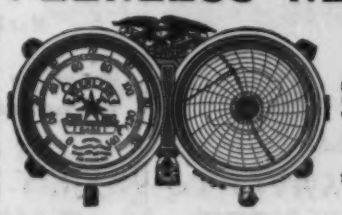

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THE MANUFACTURE OF BISULPHITE FIBRE MADE PRACTICAL

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THIS COMPANY'S ONE-METAL DIGESTERS, ROTARY OR STATIONARY.

NO LININGS TO REPAIR OR RENEW.

Will produce more Fibre in a given time of the Finest Quality than any lined Digesters of same size.

Digesters constructed to withstand the highest pressure. Discharge contents under any pressure.

Cost per Ton producing capacity LOWER THAN ANY KNOWN. | One Hour's Time between Cooks ALL THAT IS NECESSARY.

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THIS COMPANY'S PROCESS was put in the mill of the ATLAS PAPER COMPANY, of Appleton, Wis., SUBJECT TO ACCEPTANCE, if it PROVED SATISFACTORY.

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Its process may be inspected by parties desiring to investigate by obtaining permission from the ATLAS PAPER COMPANY, or by applying to the Treasurer of THE NATIONAL SULPHITE BOILER AND FIBRE COMPANY,

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WE CLAIM:

First—A chemical union of two metals, iron and lead, forming a solid shell. The iron furnishes the required strength and the lead the acid resisting qualities.

Second—A Lead Lining that cannot "creep" nor separate in any manner from the iron and that will last as long as the Iron Shell itself, **AND REQUIRING NO REPAIRS.**

Third—Boilers can be made either Rotary or Vertical, to suit purchasers, and can be filled, cooked and discharged as quickly as any other boilers that can be made.

Fourth—We unite in our system every advantage of every kind that can be claimed for any other boiler or process.

☞ We solicit correspondence relative to Sulphite Plants, and our engineer will furnish complete Plans and Specifications when desired.

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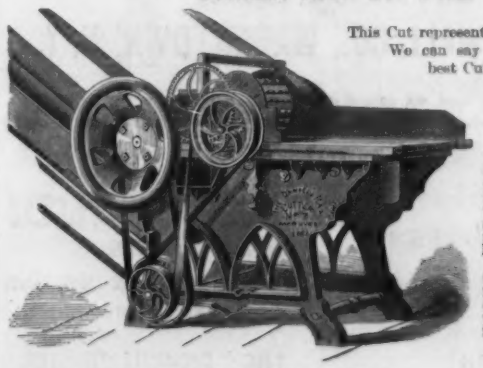
CHAMPION OF THE WORLD.



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This Cut represents our Improved Iron Frame Rag Cutter. We can say with all confidence we have the best Cutter in the UNITED STATES.

A GREAT IMPROVEMENT.

We have made a new cylinder pattern for our cutters, which has double the shear cut of any Rag Cutter we have sent out. This cylinder carries knives 12¼ inches long, the same length of bed knife, which will prevent the winding of stock as heretofore; takes less power for the reason of the extra shear cut which we have made.

Hereafter we shall make all our new Cutters with new cylinder, and we can furnish all of our old cutters with duplicate cylinders which our customers may want for their old cutters. Also knives for the same.

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Samples solicited from Mills. Twines for Mill use.

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Works at Ingelheim, Rheindürkheim, Gengenbach, Dohna, Koetitz (Täunicht), Alt-Oels, Sattler and Hirschberg,

RECOMMEND THEIR FIRST-CLASS

Bleached Straw Pulp,

Unequaled in Whiteness and Purity; Strong and Felty. Warranted free from clays and colors, and used by the leading Paper Mills in the States and in Europe.

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BIRCH BROTHERS

AGENTS FOR

BENTLEY & JACKSON'S

New "Patent" Guillotine Rag Chopper.

6 OLIVER ST., BOSTON, MASS.

Manufacture of Artificial Ultramarine.

Authoritative evidence is given that the discovery of the manufacture of artificial ultramarine was made by J. B. Guimet; he first obtained it on a small scale in 1826; in 1828 he was awarded the prize of 6,000 frs. offered by the French Société d'Encouragement for his discovery, and in 1831 he founded the still existing manufactory for his product at Fleurien-sur-Saone. Gmelin recognized the possibility of producing artificial ultramarine in 1827, and in 1828 succeeded in obtaining it on a laboratory scale. From Guimet's own notes it is shown that he had already tried making it on a large scale in October, 1826, so that the priority of his claim to the discovery is clearly established.

In the account given by the authors of the manufacture of artificial ultramarine the following points are of interest:

The chemical composition of the green and blue varieties appears to be identical, the change from green to blue is due to oxidation, and there is not as much as 1 per cent. difference in the proportions of any of the constituents of the two products. In the transformation from blue to red, which is effected by prolonged burning, a change in chemical composition takes place. The lye extracted from the coloring matter contains alumina in a soluble form, while the proportions of sulphur and of soda contained in the lyes appear almost constant. The formation of red ultramarine is not due to the presence of an excess of silica, as often supposed, for if the red product, when it contains an excess of silica, be lixiviated and then heated with carbon, it is transformed into the blue variety and the two products contain the same proportions both of silica and of alumina. The change is due to oxidation, and while sulphurous acid is first formed in the burning, sulphuric acid results afterward, and this acid favors the production of the red ultramarine.

The proportion of alumina employed in making ultramarine determines the shade of blue obtained; the proportions of soda and of silica are practically constant, about 20 per cent. of the former and 37 to 38 per cent. of the latter. It appears that varying amounts of alumina and of sulphur do not prevent the formation of ultramarine as a product of definite composition. A series of ultramarines has been obtained by E. Guimet by substituting selenium and tellurium for sulphur on the one hand, and by replacing the soda by other alkalies and by the alkaline earths on the other. The products thus obtained present the same reactions as ordinary ultramarine; the colors obtained by using selenium are brown, purple red, rose color, and finally white; with tellurium yellow, green, gray and white are successfully formed. Potash lime, &c., yield colorless ultramarines. A description of the manufactory at Fleurien is given, where as much as one-tenth of the total annual production in Europe is said to be made.

A Tariff No Increase of Cost to the Consumer.

Considerable gratification and consolation have been derived by free trade advocates from the fact that some time ago a maker of boiler tubes, doing business in Boston, had exported some tubes for one of the foreign manufactories of the Babcock & Wilcox Company. George H. Babcock, of that company, writing from Holland, says:

I was surprised to see that transaction instanced as an evidence that the American system of protection to home industry was a failure and that the boiler tube manufacturers would be better off under free trade. Now, while boiler tubes are our "raw material," and, in common with other manufacturers, it would be for our interest to have our raw material duty free, provided the duty was retained upon boilers, our manufactured product, yet I fail to see how the fact quoted is evidence of the approach of that desired condition. It is true that we did order a bill of steel boiler tubes to be shipped from Boston and delivered at a slightly less price than we could buy the same quality of tubes in Glasgow. But this is not so strange when we consider that the price in Glasgow is abnormally high, owing to a combination among manufacturers, and represents a very large profit on the cost of production.

The Boston house, getting its stock at foreign prices, plus 10 per cent. duty, found that it could in this case afford to realize enough less profit than the foreign manufacturers were demanding to balance the extra cost of labor, duty on material and freight. Were the makers of Scotch tubes so disposed they could undersell the price paid the Boston house by probably 40 per cent. and still make as much profit as the Boston makers did on this transaction. In proof of this we are buying in Glasgow certain tubes which do not come into the combination rates at prices which would soon bankrupt any American manufacturer.

I note your remark that, "without the 45 per cent. that must be paid on the same steel when used for goods sold in this country they could be sold so much cheaper here, the quantity made would increase, more labor would be employed, and everyone would be benefited—in short, the exactly opposite effect would be secured from that produced by a 'protective tariff.'" That is, assuming the duty to be taken off the "steel skelps," the tubemaker's "raw material," and retained on the tubes, his "finished product." The same might be true, possibly, of every manufacturer, provided it did not at the same time act reversely and to a counterbalancing extent on some other product. In the case supposed, would not the labor thrown out of use in providing the "skelps" more than equal any additional labor employed in making more tubes? But the steel rolling mills thus stopped would decrease the demand for boilers and boiler tubes, and so would there not be fewer made rather than more? And so labor would suffer while no one is benefited.

My experience of twenty years shows that that amount of reduction would not cause any perceptible increase in the demand either for tubes or boilers. The Babcock & Wilcox Company is probably the largest user of boiler tubes in the world. Its sales in June last, in Europe and America alone, required the use of 1,000,000 feet of 4 inch tubes. These we buy in the United States, Scotland, Germany and France, as we have occasion, and, of course, buy as cheaply as anybody. Now, although the American maker pays twice as much for his labor and much more for his material, he sells within 10 to 20 per cent. of the price in free trade countries, notwithstanding the fact that he is protected by a tariff amounting to about 100 per cent. on the cost of production. This means that he makes less profits than the man who manufactures under free trade, while the entire benefit of protection is reaped by the laborer. It means another thing also—that there is no truth in the often repeated statement that a tariff increases the cost to the consumer equal to the amount of the duty. Tubes have been sold in New York within the last five years at a price less than the amount of the duty on the same tubes if imported, and they can be bought to-day at a small advance upon that figure. The effect "produced by a protective tariff" is "the exact opposite" of that commonly attributed to it by the advocates of free trade or of a "tariff for revenue only." It seems, in practice, to reduce the cost to the consumer of most articles of necessity and many of luxury, while it enhances the rewards of labor and reduces the profits of manufacture.

WANTED—A COMPETENT FOREMAN FOR a mill making building and wrapping papers in the West; must be temperate, experienced and active; permanent position to right man. Address, with age and references, "STRAW BOARD AND WRAPPING," care of Paper Trade Journal.

LOWVILLE IRON WORKS,

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—MANUFACTURERS OF—

TWO AND THREE POCKET HYDRAULIC Wood Pulp Grinders,

WET MACHINES, WOOD BARKERS,

—AND—

A FULL LINE OF Wood Pulp Machinery.

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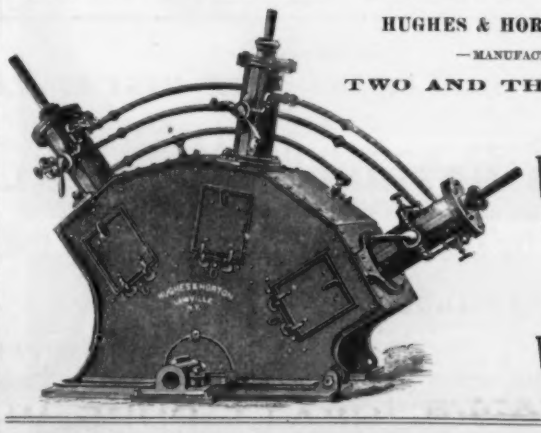

HYDRAULIC FEED PULP GRINDER.

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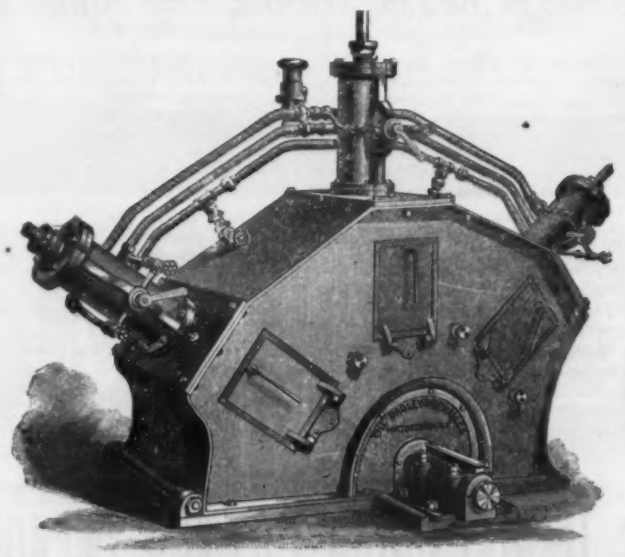

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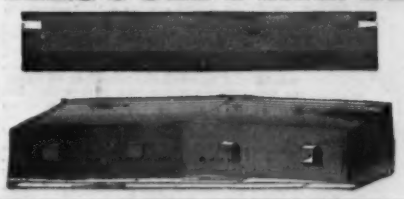

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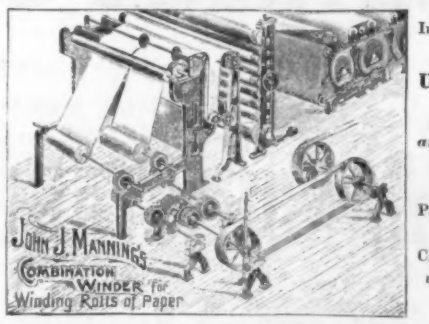

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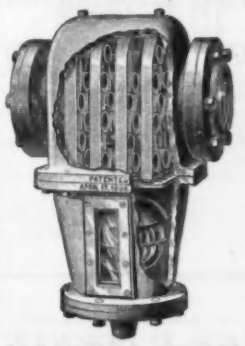

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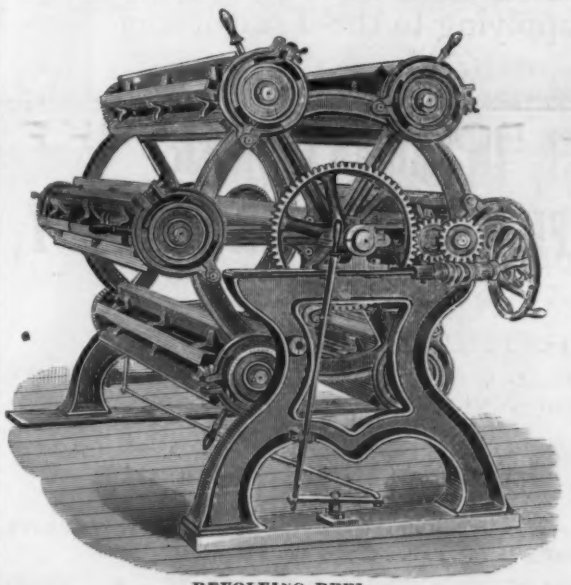

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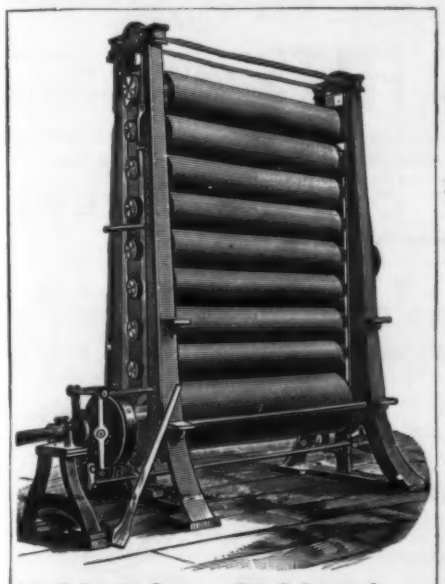

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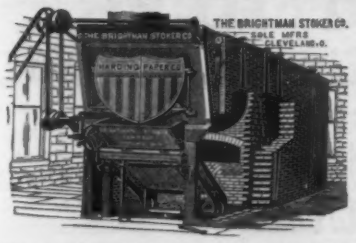

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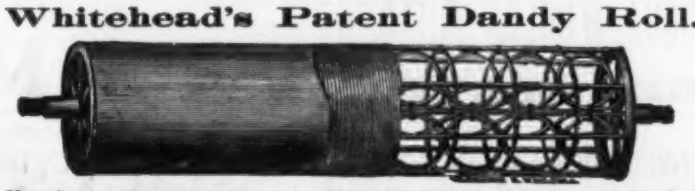

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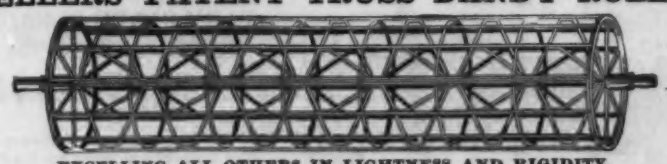

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